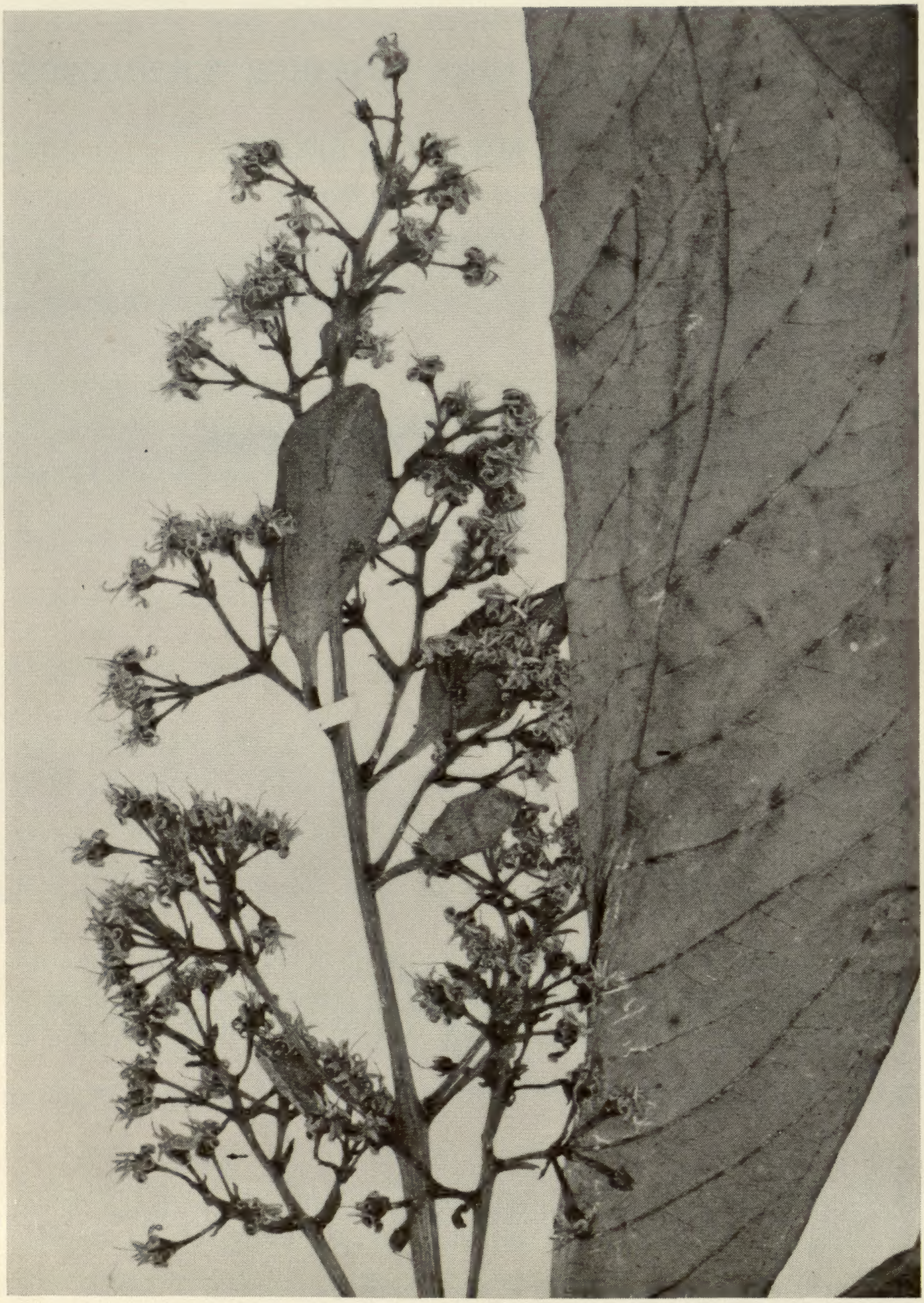


Frontispiece

Parathesis psychotrioides Lundell. Inflorescence and leaf, *M. Bourgeau 1580* (P).

15.00
.T236
L86
1966

The Genus Parathesis of the Myrsinaceae

BY

CYRUS LONGWORTH LUNDELL

PUBLISHED BY TEXAS RESEARCH FOUNDATION
RENNER, TEXAS
1966

MISSOURI BOTANICAL
GARDEN LIBRARY

COPYRIGHT, 1966

TEXAS RESEARCH FOUNDATION

ALL RIGHTS RESERVED

PRINTED IN THE U.S.A. BY

CAYUGA PRESS, INC.

ITHACA, N.Y.

To the Memory

of

My Father

JOHN CYRUS LUNDELL

1880–1933

Preface

For nearly forty years, the Myrsinaceae have intrigued me. My first collections of *Parathesis* were made in 1928 at Honey Camp in British Honduras. Interest in this genus developed in the years 1938–1946 during which period I described ten new species from Mexico and Central America.

Almost entirely tropical in distribution, the family has received only sporadic attention from taxonomists in the Western Hemisphere. Principal treatments are in floristic works. Collections have accumulated in American herbaria under a confusion of names. My current studies are concentrated on the family in Mexico and Central America.

This monograph of *Parathesis* is an attempt to critically evaluate all the species of one of the larger natural genera. Although I have made field observations on some lowland species in eastern Mexico, Guatemala and British Honduras, the study has been based primarily on herbarium specimens.

In an attempt to present as useful a treatment of the genus as possible, the species are illustrated either by Text Figures or Plates or by both. The drawings are the fine handiwork of Miss Vivien Frazier of Dallas. I am deeply indebted to her for her splendid collaboration. Miss Frazier's patient and careful work adds much to the value of the study. All of the photographs for the Plates were made by Dr. L. J. Streetman and Mr. Charles Julian of the staff of Texas Research Foundation. Also, Mr. Julian photographed all types and isotypes as well as representative collections of most of the species of the genus, and grateful acknowledgment is made for his help, as well as that of Dr. Streetman.

My Secretary, Mrs. Lillian Harvey, has assisted in the study from its inception through publication. She has edited and typed the manuscript, prepared the list of cited specimens, and indexed the volume. For her significant contributions, I express my deep appreciation.

Grants from the Dodge Jones Foundation have supported field studies in Guatemala, and made possible the illustration of this monograph. To Mrs. Ruth Jones of Abilene, grateful acknowledgment is made for this financial aid, and for the encouragement she has given to my work in so many ways.

Renner, Texas
April, 1966.

Contents

PREFACE vii

INTRODUCTION 1

SYSTEMATIC TREATMENT 7

Key to Sections and Series 8

General Key to Species 12

INDEX OF SPECIMENS CITED AND ANNOTATED 193

INDEX 205

Illustrations

Parathesis psychotrioides . . . . . FRONTISPIECE

TEXT FIGURES

PAGE

1. *Parathesis trichogyne* 23
2. *Parathesis chrysophylla* 25
3. *Parathesis acuminata* 28
4. *Parathesis papillosa* 30
5. *Parathesis pyramidalis* 31
6. *Parathesis panamensis* 33
7. *Parathesis columnaris* 34
8. *Parathesis sessilifolia* 37
9. *Parathesis chiapensis* 41
10. *Parathesis rufa* 43
11. *Parathesis prionophylla* 45
12. *Parathesis parvifolia* 46
13. *Parathesis serrulata* 49
14. *Parathesis Eggersiana* 54
15. *Parathesis amazonica* 57
16. *Parathesis belizensis* 58
17. *Parathesis aeruginosa* 60
18. *Parathesis obtusa* 63
19. *Parathesis crassiramea* 65
20. *Parathesis microcalyx* 68
21. *Parathesis oblongifolia* 69
22. *Parathesis elliptica* 72
23. *Parathesis brevipes* 75
24. *Parathesis Donnell-Smithii* 78
25. *Parathesis Donnell-Smithii* 79
26. *Parathesis emarginata* 84
27. *Parathesis guatemalensis* 86
28. *Parathesis oxyphylla* 88
29. *Parathesis cubana* 90
30. *Parathesis subcoriacea* 95

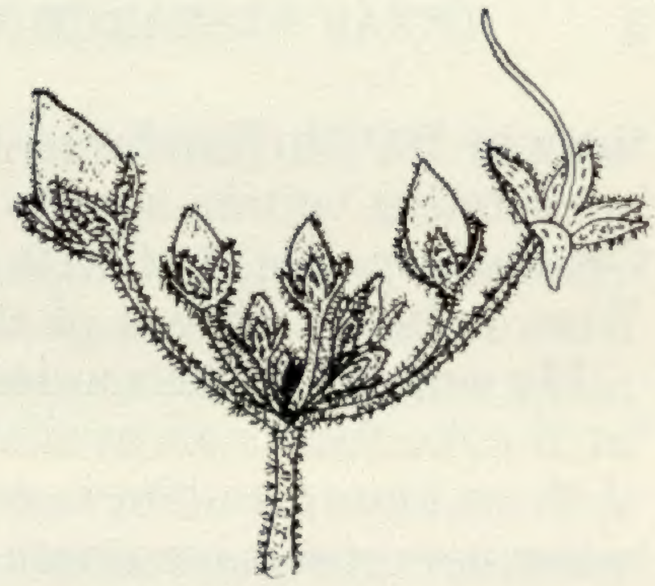
31. *Parathesis mexicana* 98
32. *Parathesis Agostiniana* 99
33. *Parathesis lanceolata* 102
34. *Parathesis laxa* 103
35. *Parathesis hondurensis* 105
36. *Parathesis ferruginea* 107
37. *Parathesis rosea* 109
38. *Parathesis reticulata* 110
39. *Parathesis reticulata* var. *sinuata* 112
40. *Parathesis crenulata* 114
41. *Parathesis membranacea* 117
42. *Parathesis fusca* 119
43. *Parathesis oblanceolata* 122
44. *Parathesis vestita* 124
45. *Parathesis pleurobotryosa* 128
46. *Parathesis Oerstediana* 131
47. *Parathesis reflexa* 132
48. *Parathesis calophylla* 135
49. *Parathesis villosa* 138
50. *Parathesis Conzattii* 142
51. *Parathesis stenophylla* 143
52. *Parathesis venezuelana* 145
53. *Parathesis vulgata* 147
54. *Parathesis macrantha* 150
55. *Parathesis glabra* 152
56. *Parathesis aurantiaca* 154
57. *Parathesis tartarea* 156
58. *Parathesis tomentosa* 158
59. *Parathesis Skutchii* 160
60. *Parathesis latifolia* 163
61. *Parathesis leptopa* 165
62. *Parathesis tenuis* 167
63. *Parathesis subulata* 170
64. *Parathesis Rekoi* 172
65. *Parathesis Candolleana* 176
66. *Parathesis adenanthera* 178
67. *Parathesis psychotrioides* 181
68. *Parathesis melanosticta* 184
69. *Parathesis Seibertii* 188
70. *Parathesis angustifolia* 189
71. *Parathesis Moritziana* 191

PLATES

1. *Parathesis chrysophylla* 26
2. *Parathesis columnaris* 35
3. *Parathesis sessilifolia* 38
4. *Parathesis parvifolia* 47

5. *Parathesis serrulata* 50
6. *Parathesis serrulata* 51
7. *Parathesis serrulata* 52
8. *Parathesis Eggersiana* 55
9. *Parathesis tetramera* 62
10. *Parathesis crassiramea* 66
11. *Parathesis oblongifolia* 70
12. *Parathesis elliptica* 73
13. *Parathesis brevipes* 76
14. *Parathesis Donnell-Smithii* 80
15. *Parathesis Donnell-Smithii* 81
16. *Parathesis oxyphylla* 89
17. *Parathesis cubana* 91
18. *Parathesis subcoriacea* 96
19. *Parathesis crenulata* 115
20. *Parathesis fusca* 120
21. *Parathesis Schultesii* 126
22. *Parathesis pleurobotryosa* 129
23. *Parathesis reflexa* 133
24. *Parathesis calophylla* 136
25. *Parathesis villosa* 139
26. *Parathesis vulgata* 148
27. *Parathesis tomentosa* 159
28. *Parathesis Skutchii* 161
29. *Parathesis tenuis* 168
30. *Parathesis subulata* 171
31. *Parathesis Rekoi* 173
32. *Parathesis adenanthera* 179
33. *Parathesis psychotrioides* 182
34. *Parathesis melanosticta* 185
35. *Parathesis melanosticta* 186

Introduction



The Myrsinaceae are almost exclusively tropical woody plants. The family is difficult, for there are few bold characters with which to separate genera and species. Classification must be based on the interpretation of variable morphological characteristics. Problems of relationships are perplexing, and fine distinctions are necessary to bring any order out of chaos. Anyone not willing to accept fine morphological distinctions should not venture into the taxonomy of the Myrsinaceae.

The most important treatment of the family is the monograph by Dr. Carl Mez which was published in 1902 in Das Pflanzenreich.[1] This is outdated and no longer satisfactory, but it is still the basic reference work. Earlier treatises were by Alphonse DeCandolle, of which the most important is in the Prodromus.[2]

Parathesis Hook.f.[3] is one of the well-marked natural genera. Aside from Mez's monograph, the only definitive treatment of the genus is by Lundell in the Flora of Guatemala,[4] which covers the species of a limited geographical area. Strictly American, it can be distinguished easily by its pubescent flowers, narrow sepals open in bud, and valvate petals which are papillose-tomentose within.

Indicative of the problems encountered in the Myrsinaceae, the number and arrangement of the ovules in the placenta have been used to separate the tribes and genera. Yet the study of *Parathesis* has revealed that such distinctions can be used only with reservation. Ovule number in *Parathesis* ranges from three in *P. tenuis* Standl. to nineteen in *P. trichogyne* Hemsl., the former uniseriate, the latter pluriseriate. In other species some of the ovules are biseriate. Formerly this genus was considered to have few uniseriate ovules, and placed in the Tribe Myrsineae! In spite of these variations within a single genus, the number of ovules and their arrangement still must be considered basic in making tribal and generic distinctions. Such is the nature of the Myrsinaceae.

The monograph of *Parathesis* is based on accumulated collections in major herbaria of America and Europe. Types, isotypes and authentic specimens of every species, excepting *P. Rothschuhiana* Mez, have been studied. The identity of *P. Rothschuhiana* is quite well established from the photograph of the type and drawings by Mez.

The only excluded binomial is *P. acutissima* Cuatr. (Rev. Acad. Colomb. Cienc. 8: 324. 1951), a taxon with broad imbricate sepals. Known only from fruiting material, its generic position is uncertain.

The study of herbarium collections has been implemented by field investiga-

---

[1] Mez, Carl, Myrsinaceae. In A. Engler, Das Pflanzenreich IV. 236: 1–437, *figs. 1–61*. 1902.

[2] Candolle, Alphonse De. Myrsinaceae. In DC. Prodr. 8: 75–140. 1844.

[3] Hooker, J. D. In Benth. & Hook. f., Gen. Pl. 2: 645. 1876.

[4] Lundell, Cyrus Longworth. Fieldiana: Bot. 24, Part 8: 160–189, *figs. 43–52*. 1966.

tions in British Honduras, Guatemala and Mexico, which have been helpful in interpreting certain species. The genus is best represented in the mountains of Central America, but with species ranging from Mexico to Peru and into the West Indies. Eighteen of the species are known only from the type collection.

My concept of the species is essentially the same as that of Mez. The accumulated collections now available are so much greater that a clearer interpretation of those known to him is possible. Although some problems have been clarified, many new ones have arisen which only future workers can elucidate as material accumulates and studies progress.

The characters used in separating the species of *Parathesis* have been tested, and they are reliable to a high degree. Some species stand out, others are plastic and difficult to tie down. In one species the characters may be stable, in another exasperatingly variable. Hence the use of such words as "usually," "commonly," "generally," and so forth are essential. They need not impair the worth of the key or description, provided that text, illustrations, keys and annotated specimens are used in conjunction when identifications are made.

No attempt should be made to use this monograph without first taking the time to become acquainted with the fine variations in morphological characteristics of *Parathesis*. Expecially is this true of the types of pubescence. The use of a microscope is imperative, for all descriptions and interpretations were made with floral and other parts magnified from ten to twenty times.

Notes on the General Morphology of Parathesis

The Myrsinaceae of the New World are woody plants. In *Parathesis* the species range from low shrubs to trees up to 20 meters high. The stems are indeterminate or determinate. The leaves are alternate, petiolate and pinnate-veined. The decurrent base of the leaf blades gives some the appearance of being subsessile. Margins of the leaves are either entire, crenulate, serrulate, denticulate or coarsely and irregularly dentate. In this treatment of *Parathesis*, very little weight is given to leaf venation. As in all Myrsinaceae, punctate glands are present in the leaf blades and these are of varying form and abundance, but they are used very little for diagnostic purposes in this monograph.

The inflorescences are either terminal or axillary panicles, with notable exceptions where both types occur occasionally in the same species, sometimes on the same limb. In those that are axillary, the terminal bud is conspicuous, usually elongate. In *P. acuminata* Lundell, only two specimens have been seen, one of these has the typical terminal panicle, the other a single axillary inflorescence. In *P. cubana* (A.DC.) Mol. & Gomez Maza, the terminal is usual, but leafy axillary panicles occur occasionally, and the type of *P. corymbosa* Hemsl., a synonym, is in this category. In *P. glabra* Donn.Sm. all specimens examined have axillary inflorescences except one, and this collection (*White 156*, MO), has both types on the same branch. In *P. tomentosa* Lundell, the inflorescences are branched to base, with some axillary, others terminal. This is likewise true of *P. subcoriacea* Lundell. In spite of the exceptions, the division of the genus into two sections, species with terminal or axillary inflorescences, is the most practical. The terminal are invariably pyramidal panicles.

The panicles are pinnately branched and variable in size, mostly long pedunculate and usually with slender elongate branches. In some species the branches are reduced. In several species the peduncles of the corymbs and umbels are

sometimes less than 1 mm. long, notably in *P. subcoriacea* Lundell, *P. Skutchii* Lundell, and *P. latifolia* Lundell.

All flowers are either corymbose or umbellate in bud, but in flower, especially late flowering stages, the rachis of the corymb often elongates. The most marked development of this is found in *P. Donnell-Smithii* Mez, where the fruits are in racemes. Hence the flowers in *Parathesis* are often described as subcorymbose or subcorymbose-racemose where the elongation of the rachis takes place. The elongation occurs as flowering progresses, and fruits sometimes are near maturity at the base of the raceme while buds and flowers still are developing at the apex. In *P. Eggersiana* Mez (Plate 8), the terminal corymbs which flower first are racemose-corymbose, while the lower corymbs in earlier flowering stages are corymbose. In other species, such as *P. hondurensis* Standl. (Fig. 35) and *P. subulata* Lundell (Plate 30), the rachis is not accrescent, and the fruits are either umbellate or corymbose.

Pedicels are short only in a few species, the most notable reduction being in *P. crassiramea* Lundell, where they are fleshy and almost as thick as they are long (Fig. 19). Usually the pedicels equal or exceed the flowers in length, and they are slender or even filiform in some species. Each is subtended by a bract. They are often accrescent.

The small flowers of *Parathesis* are perfect, symmetrical, punctate, and always pubescent. They are usually 5-merous, sometimes 4-merous, with 6-merous flowers occasionally present with the others.

The persistent calyx is useful in separating most species. The sepals, open in bud, are united at base. Their shape and size are usually consistent in each taxon. In the few species where sepals show considerable variation in size, as in *P. chiapensis* Fern. and *P. Donnell-Smithii* Mez, the other floral parts are variable likewise and hybridization is suspected. After anthesis the corolla falls away and the sepals turn inward to form a tight covering around the ovary. This is a characteristic of generic significance!

The petals, united at base only, are valvate. They are revolute, usually tomentulose outside, either papillose-tomentose over entire surface within or glabrous at base. Except for size, and distribution of tomentum within, they do not show much variation of value for differentiation of species.

The stamens, attached at base of the corolla tube, are opposite the petals. Except in a few species where they coalesce laterally at base, the filaments are free; they are punctate of epunctate, glabrous or rather sparingly papillose or pubescent with gland-tipped hairs. In a majority of the species the filaments are short and stout, mostly shorter than the anthers, but in some equaling or subequaling them. In others they are slender and elongate, two to three times longer than the anthers, notably in *P. macronema* Bullock, *P. Rekoi* Standl., *P. panamensis* Lundell, and *P. adenanthera* (Miq.) Hook.f.

Characteristics of the anthers are highly important in the separation of species. In color they are bright yellow and conspicuous. Dorsally attached, they dehisce introrsely by longitudinal slits or by apical pores. After anthesis the pores lose their shape and the slits open up, so that the presence of pores is not always discernible, and little used in the classification.

The anthers are subsaggital and vary in shape from linear-lanceolate to oblong to ovate. The basal lobes are small and sometimes vestigial in *P. cubana* (A.DC.) Mol. & Gomez Maza. The apex may be acute or acuminate, obtuse and apicu-

late, or obtuse and emarginate. In some species there is an apical groove on the dorsal side. Most are glabrous, a few bear some apical hairs. In *P. serrulata* (Sw.) Mez, there is a dorsal line of hairs, and the apex is conspicuously barbate.

Erect or versatile, the versatile anthers are all dorsifixed at or near the middle, the erect ones mostly lower and some basal.

The presence or absence of glands dorsally on the connectives of the anthers, the color of the glands, and the size, shape, and development of the glands are all very useful features in differentiating species. Within each taxon, the punctation of anthers is consistent and dependable. The punctation ranges from minute rounded glands to elevated fused masses of conspicuous glands, the color either orange, reddish or black, mostly black.

The pistil is either glabrous or pubescent. Rarely, as in *P. cubana* (A.DC.) Mol. & Gomez Maza, are glabrous and pubescent pistils found in the same taxon. The indument is usually consistent in character within a taxon, and persistent even on young fruits. The pubescence ranges from papillose to short villous to hirtellous to densely tomentose, the hairs either simple and erect, branched, or matted. The ovaries are ovoid or subglobose, rarely subtruncate. In some species they are ribbed. The style is slender, short to elongate, usually subequaling the petals; it is often pubescent at base, and punctate. The stigma is punctiform.

In the 1-celled ovary, the free central placenta is basally attached. It is often apiculate, sometimes acicular at apex. The ovules vary from few (three) to numerous (nineteen), and they are uniseriate mostly, but sometimes partly biseriate, and rarely and atypically pluriseriate, as in *P. trichogyne* Hemsl. Within a taxon, the number rarely exceeds four between the limits of minimum and maximum. The number of ovules is useful for indicating relationships. The ovules may be either completely immersed or enclosed in the placenta, or exposed apically through openings in the placenta wall.

The fruits are globose or subglobose, 1-celled, 1-seeded. They have scant pulp when ripe, and are eaten mostly by birds. Nearly always punctate and smooth, a few species have fruits which dry shallowly costate. The fruits of *P. adenanthera* (Miq.) Hook.f. are ferruginous-puberulent at first, and those of *P. Schultesii* Lundell are persistently pubescent. In so far as known all the others are without indument, except for occasional remnants at base of style.

In *Parathesis* an understanding of the character of the pubescence is necessary. Where flowering material is not available, it is commonly the most practical feature of value in recognition of species. Distinctive types of pubescence are present and these are of sufficient significance to merit special attention. With the unaided eye, many species appear essentially glabrous, but with examination at magnifications from ten to twenty, very distinctive indument is discernible. The pubescence is persistent in most species. It is usually reddish or brownish.

The modified hairs are mostly of two types, stellate and dendroid. The stellate may be sessile or stalked, short or long rayed, the rays either spreading or appressed. In *P. vestita* Lundell, the coarse hairs are either simple, long-stalked and bifid with short rays, or stellate. There are all degrees of modification of the stellate hairs, but within a species the types of stellate hairs are consistent to a high degree. In some instances, which I call stellate-lepidote, the hairs are scale-like but with short distinguishable rays. Only in *P. glabra* Donn.Sm. are there inconspicuously appressed scales without evident rays.

The dendroid hairs, usually appearing rather coarse with magnification of ten to twenty times, are variable. Some are long stalked with apical branches, the branches of variable lengths. Others are multibranched along the trunk of the hair to its base.

The simple hairs are equally variable, some villous in nature, others soft and straight or stiff. The glandular are predominantly papillose, but some are longer and gland-tipped.

The indument of stems and inflorescences is predominently tomentose or tomentulose, with hairs either stellate, dendroid or simple, or in combination. The looseness or compaction of the tomentum is of some diagnostic importance.

A feature of pubescence that is notable is the bizonal distribution on the undersurface of the leaves. Usually extending from the costa lengthwise a third to half the distance to the margin is a zone of hairs which is denser than that of the marginal section. These are designated as costal and marginal zones. Where bizonal pubescence is present, the marginal zone is often glabrescent. The incidence of bizonal pubescence is greatest where the indument of species consists of closely appressed stellate hairs.

Citations and Acknowledgments

Standard abbreviations are used in designating herbaria from which cited specimens were studied, as follows:

A, Arnold Arboretum, Harvard University, Cambridge.
BM, British Museum of Natural History, London.
C, Botanical Museum and Herbarium, Copenhagen.
F, Chicago Natural History Museum, Chicago.
G, Conservatoire et Jardin botaniques, Geneva.
GH, Gray Herbarium, Harvard University, Cambridge.
K, Royal Botanic Garden, Kew.
LL, Lundell Herbarium, Texas Research Foundation, Renner.
MEXU, Herbario Nacional del Instituto de Biologia de la Universidad Nacional de Mexico, Mexico City.
MO, Missouri Botanical Garden, St. Louis.
NY, New York Botanical Garden, New York.
P, Museum National d'Histoire Naturelle, Paris.
S, Naturhistoriska Riksmuseum, Stockholm.
TEX, University of Texas, Austin.
UC, University of California, Berkeley.
US, United States National Herbarium, Washington.
Y, Samuel James Record Memorial Collection, School of Forestry, Yale University, New Haven.

To the officials of these institutions, I am deeply indebted for their cooperation in making available on loan the specimens on which this study is based. In particular the lending by European herbaria of the types of DeCandolle, Swartz, Oersted, H.B.K., Hemsley, Mez, Bentham and Bullock, and of other type material and historical specimens, has contributed immeasurably to the completeness of this treatment. It has been possible to examine authentic material of all binomials in the genus.

All species of *Parathesis* are represented in the Lundell Herbarium by type photographs and photographs of most of the isotypes. In addition, a series of photographs of collections of each species has been made to show variation. Together with types, isotypes, drawings of every taxon, and series of specimens of most species, the collection in the Lundell Herbarium is the most representative of the genus. This assemblage of material has been greatly enhanced by cooperating officials of herbaria, particularly at Copenhagen, Stockholm and Geneva, who have released historic duplicates of *Parathesis*, including isotypes.

Systematic Treatment

PARATHESIS Hooker f.

Trees or shrubs, young branchlets commonly ferruginous-tomentose with stellate or dendroid hairs, often glabrescent; leaves petiolate, usually pubescent on lower surface, the hairs stellate or dendroid, often appressed and bizonal, the margins entire, crenulate or dentate; flowers perfect, usually 5-parted, sometimes 4-parted, rarely 6-parted, mostly pink or white, umbellate, corymbose or subcorymbose-racemose; inflorescences paniculate, axillary or terminal; sepals small, open in bud, connate at base, commonly tomentulose and papillose; corolla rotate, usually tomentulose outside, papillose-tomentose inside at least apically and along edges, the petals united at base, valvate, narrow, acutish; stamens usually 5, sometimes 4 or 6, inserted near the base of corolla tube, the filaments well developed, slender to stout; anthers sagittal, lanceolate to ovate, acute or mucronate or obtuse at the apex, dorsally punctate or epunctate, dehiscent by introrse slits or apical pores, usually dorsifixed above the base, erect or versatile; ovary ovoid or subglobose, the style long and slender, the stigma punctiform; ovules few to numerous, usually 1-seriate, sometimes partially 2-seriate, or rarely pluriseriate on the placenta, enclosed or exposed apically; fruit 1-seeded, the endocarp crustaceous; embryo cylindric, transverse.

About 70 species, in tropical America, chiefly in mountainous regions of Central America.

Type species: *P. serrulata* (Sw.) Mez *Ardisia serrulata* Sw.

Since so little is known about most of the species of *Parathesis*, this monograph is essentially an introduction to the study of the genus. Relationships are not well enough understood to name and describe formal sections and series. There are some natural groups, but others are poorly defined. Tentative affinities can be suggested, and an attempt has been made to do this.

Mez divided the genus on the basis of terminal and axillary inflorescences, and this still appears to be practical. The occasional presence of axillary inflorescences in species with predominantly terminal inflorescences, and the occurrence sometimes of terminal inflorescences in species usually having axillary inflorescences are variations to be noted.

The pubescence in the genus is distinctive, but very difficult to characterize in terms which make it useful for classification. Two sections based on types of pubescence would appear to reflect natural affinities better than the two sectional divisions based on terminal and axillary inflorescences. Genetical studies are needed to help clarify these and other problems.

The key to sections and series is designed to expedite the use of the general key.

Key to Sections and Series

Inflorescences terminal, pyramidal-paniculate.....Section I, Series 1–10, pp. 12–18, 22–123.
Inflorescences axillary.....Section II, Series 11–23, pp. 18–22, 123–192.

SECTION I

Inflorescences terminal, pyramidal-paniculate

Anthers versatile.....Series 1–2, pp. 22–33.
Anthers erect.....Series 3–10, pp. 32–123.

Series 1–2

Ovules 8–14 (19), uniseriate, biseriate or pluriseriate.....Series 1, pp. 22–32.

1. *P. trichogyne.*
2. *P. chrysophylla.*
3. *P. acuminata.*
4. *P. papillosa.*
5. *P. pyramidalis.*

Ovules 5 or 6, uniseriate.....Series 2, pp. 32–33.

6. *P. panamensis.*

Series 3–10

Pubescence of branchlets usually rather coarse and conspicuous, the hairs mostly erect, sometimes appressed on undersurface of leaves.....Series 3, pp. 32–61.

7. *P. columnaris.*
8. *P. sessilifolia.*
9. *P. chiapensis.*
10. *P. rufa.*
11. *P. prionophylla.*
12. *P. parvifolia.*
13. *P. serrulata.*
14. *P. Eggersiana.*
15. *P. amazonica.*
16. *P. belizensis.*
17. *P. aeruginosa.*

Pubescence of branchlets and undersurface of leaves fine and inconspicuous, the hairs usually closely appressed. Series 4–10, pp. 61–123.

Series 4–10

Flowers 4-parted, rarely 5-parted.....Series 4, pp. 61–64.
18. *P. tetramera.*
19. *P. obtusa.*
Flowers strictly 5-parted.....Series 5–10, pp. 64–123.

Series 5–10

Pedicels stout, short, scarcely longer than thick; ovules partly biseriate.....Series 5, pp. 64–67.
20. *P. crassiramea.*
Pedicels slender, elongate; ovules uniseriate.....Series 6–10, pp. 67–123.

Series 6–10

Ovary densely pubescent, usually tomentose to some degree.....Series 6, pp. 67–89.
21. *P. microcalyx.*
22. *P. oblongifolia.*
23. *P. elliptica.*
24. *P. brevipes.*
25. *P. Donnell-Smithii.*
26. *P. emarginata.*
27. *P. guatemalensis.*
28. *P. oxyphylla.*
Ovary usually glabrous or nearly so, the hairs when present not dense or matted.....Series 7–10, pp. 87–123.

Series 7–10

Ovules 12–16, in part biseriate.....Series 7, pp. 87–94.
29. *P. cubana.*
Ovules 4–12, strictly uniseriate.....Series 8–10, pp. 94–123.

Series 8–10

Anthers epunctate dorsally; flowers about 3 mm. long.....Series 8, pp. 94–97.
30. *P. subcoriacea.*
Anthers punctate dorsally, with either orange or black glands; flowers larger.....Series 9–10, pp. 97–123.

Series 9–10

Anthers orange-punctate.....Series 9, pp. 97–100.
31. *P. mexicana.*
32. *P. Agostiniana.*
Anthers black-punctate, sometimes orange-punctate only in *P. lanceolata*.....Series 10, pp. 100–123.
33. *P. Rothschuhiana.*
34. *P. lanceolata.*
35. *P. laxa.*
36. *P. hondurensis.*
37. *P. ferruginea.*
38. *P. rosea.*

39. *P. reticulata.*
40. *P. reticulata* var. *sinuata.*
41. *P. crenulata.*
42. *P. membranacea.*
43. *P. fusca.*
44. *P. oblanceolata.*

SECTION II

Inflorescences axillary

Pubescence of branchlets and undersurface of leaves usually rather coarse and conspicuous, the hairs mostly erect.....Series 11–13, pp. 123–137.
Pubescence of branchlets and undersurface of leaves fine and inconspicuous, the hairs usually closely appressed.....Series 14–23, pp. 137–192.

Series 11–13

Hairs usually simple, or stalked and bifid, or stellate apically.....Series 11, pp. 123–130.

45. *P. vestita.*
46. *P. Schultesii.*
47. *P. pleurobotryosa.*

Hairs mostly dendroid.....Series 12–13, pp. 130–137.

Series 12–13

Sepals less than 1 mm. long; leaves glabrescent beneath, not tomentose.....Series 12, pp. 130–131.

48. *P. Oerstediana.*

Sepals up to 2.5 mm. long; leaves tomentose beneath... Series 13, pp. 130–137.

49. *P. reflexa.*
50. *P. calophylla.*

Pubescence of branchlets and undersurface of leaves fine and inconspicuous, the hairs usually closely appressed.....Series 14–23, pp. 137–192.

Series 14–23

Anthers conspicuously black-punctate dorsally.....Series 14–15, pp. 137–153.
Anthers concolorous, orange-punctate or with scattered minute reddish or black glands dorsally.....Series 16–23, pp. 153–192.

Series 14–15

Inflorescences short villous-pubescent, the hairs unequal, not dense.....Series 14, pp. 137–142.

51. *P. villosa.*
52. *P. Conzattii.*

Inflorescences puberulent or tomentulose.....Series 15, pp. 141–153.

53. *P. stenophylla.*

54. *P. venezuelana.*
55. *P. vulgata.*
56. *P. macrantha.*
57. *P. glabra.*

Series 16–23

Anthers ovate-lanceolate, orange-punctate dorsally . . . . . Series 16, pp. 153–155.
58. *P. aurantiaca.*
Anthers mostly small and slender, concolorous, orange-punctate or with scattered minute reddish or black glands dorsally . . . . . Series 17–23, pp. 155–192.

Series 17–23

Branchlets with scaly, peeling epidermis . . . . . Series 17, pp. 155–157.
59. *P. tartarea.*
Branchlets not scaly . . . . . Series 18–23, pp. 157–192.

Series 18–23

Ovary densely pubescent, usually tomentose (also check species 64–74) . . . . . Series 18–19, pp. 157–166.
Ovary either glabrous, tomentulose, or puberulent apically and at base of style, the hairs never dense or matted (also check species 61–63) . . . . . Series 20–23, pp. 166–192.

Series 18–19

Inflorescences filiform, branched to base or nearly so; pistil with dense matted tomentum . . . . . Series 18, pp. 157–159.
60. *P. tomentosa.*
Inflorescences long-pedunculate, the branches angled . . . Series 19, pp. 157–166.
61. *P. Skutchii.*
62. *P. latifolia.*
63. *P. leptopa.*

Series 20–23

Inflorescences simple or 1-branched, small, slender, 3–6 cm. long . . . . . Series 20, pp. 166–171.
64. *P. tenuis.*
65. *P. subulata.*
Inflorescences usually branched two or more times, mostly over 10 cm. long, usually much larger . . . . . Series 21–23, pp. 169–192.

Series 21–23

Filaments papillose-puberulent (Mexico) . . . . . Series 21, pp. 169–175.
66. *P. Rekoi.*
67. *P. macronema.*
Filaments pubescent with gland-tipped hairs (South America) . . . . . Series 22, pp. 175–180.
68. *P. Candolleana.*
69. *P. adenanthera.*

Filaments glabrous.....Series 23, pp. 180–192.
70. *P. psychotrioides.*
71. *P. melanosticta.*
72. *P. Seibertii.*
73. *P. angustifolia.*
74. *P. Moritziana.*

General Key to Species

SECTION I

Inflorescences terminal, pyramidal-paniculate

1. Anthers versatile, or tardily versatile in *P. acuminata* and *P. pyramidalis*, dorsifixed at or about the middle; filaments longer than the anthers..... Series 1–2.

Series 1–2

2. Ovules 8–14 (19), minute, usually crowded, uniseriate, partly biseriate, or pluriseriate; ovary glabrous, papillose apically, or tomentose; sepals usually small, often less than 1 mm. long, sometimes up to 1.4 mm. long.
3. Anthers versatile at anthesis, small, usually less than 2 mm. long, conspicuously shorter than filaments.
4. Ovary tomentose; anthers conspicuously black-punctate dorsally, glands occasional in lobes; filaments elongate, 2.5–3.5 mm. long.
5. Sepals small, less than 1 mm. long; style stubby, usually less than 3 mm. long, with hairs at base; inflorescences finely tomentose with minute branched hairs (Honduras, Nicaragua, Costa Rica).....1. *P. trichogyne.*
5. Sepals 1–1.4 mm. long; style slender, 4–5 mm. long, glabrous; inflorescences conspicuously glandular, densely papillose and with upper layer of branched hairs (Guatemala, British Honduras, Honduras).....2. *P. chrysophylla.*
4. Ovary glabrous, or minutely papillose apically, the style glabrous; anthers sparingly punctate dorsally with minute black glands, without glands in lobes; filaments about 2 mm. long.
6. Inflorescences terminal or axillary, minutely tomentose with fine hairs; ovary glabrous except at base of style, the style pubescent at base and with scattered hairs to middle; flowers 5-parted; petals red-punctate in lines; stamens 2.75–3 mm. long (El Salvador).....3. *P. acuminata.*
6. Inflorescences strictly terminal, densely papillose; ovary minutely papillose apically, the style glabrous; flowers 4-parted, sometimes 5-parted; petals black-punctate in lines; stamens 2.5 mm. long or less (Guatemala).....4. *P. papillosa.*
3. Anthers tardily versatile, large, 2.2–2.4 mm. long, with conspicuous triangular black-punctate area dorsally, subequaling filaments (Colombia).....5. *P. pyramidalis.*
2. Ovules 5 or 6, uniseriate; ovary puberulent apically with minute reddish hairs; sepals 1.7–2 mm. long (Panama).....6. *P. panamensis.*

1. Anthers erect, usually dorisfixed near base, never versatile; filaments shorter than anthers, commonly one-half as long ..... Series 3–10.

Series 3–10

7. Pubescence of branchlets usually coarse and of distinct reddish hairs, the hairs dendroid and sessile or stipitate, or the hairs stellate with erect and spreading rays, the stellate hairs either sessile, subsessile or stipitate; pubescence beneath leaves uniform or sometimes obscurely bizonal, sometimes appressed.
8. Sepals and pedicels papillose-puberulent; the red tomentum of branchlets matted and appearing to be waxy; anthers slender, linear-lanceolate, usually adnate and forming a column (Chiapas, Guatemala, El Salvador) ..... 7. *P. columnaris.*

8. Sepals and pedicels short hirsute with stellate or branched hairs, these often stiff and bristly; the tomentum of branchlets not appearing waxy; anthers ovate or lanceolate.
9. Flowers 5–7 mm. long; sepals usually large, commonly 2–3 mm. long, rarely smaller; stamens 3–4 mm. long.
10. Branchlets conspicuously villous, dendroid hairs long-stipitate, shaggy; hairs of costa and lower surface of leaf dendroid, long-stipitate and coarse (Tabasco, Guatemala, British Honduras) ..... 8. *P. sessilifolia.*

10. Branchlets not villous, dendroid hairs short-stipitate or sessile and branched to base; hairs of costa and lower surface of leaf stellate, stipitate, subsessile or sessile, sometimes appressed.
11. Pedicels 4–12 mm. long, sometimes up to 17 mm. long in fruit, often reflexed (Mexico, Chiapas, Guatemala) ..... 9. *P. chiapensis.*

11. Pedicels 3–5 mm. long.
12. Leaves crenulate; flowers at anthesis up to 5.5 mm. long (Chiapas, British Honduras) .. 10. *P. rufa.*

12. Leaves coarsely serrate-dentate, the teeth up to 5 mm. long (see also *P. ferruginea*); flowers at anthesis up to 7 mm. long (Nayarit) ..... 11. *P. prionophylla.*

9. Flowers less than 5 mm. long; sepals small, 1–1.5 mm. long; stamens 2–2.75 mm. long.
13. Leaves small, usually less than 10 cm. long; flowers 3.5 mm. long at anthesis; anthers usually barbate apically (Hispaniola, Cuba).
14. Petioles 2–6 mm. long; leaf margin remotely denticulate-crenulate; inflorescences reduced, up to 3.5 cm. long; stamens about 2 mm. long; leaves pubescent beneath with rather coarse stipitate or subsessile stellate hairs, the rays erect or spreading (Haiti) ..... 12. *P. parvifolia.*

14. Petioles 5–12 mm. long; leaf margin crenulate; inflorescences up to 15 cm. long; stamens 2.4–2.75 mm. long; leaves pubescent beneath with fine sessile stellate hairs with long rays, these spreading or appressed (Hispaniola, Cuba) ..... 13. *P. serrulata.*

13. Leaves twice as long, 9–20 cm. long; flowers 4–5 mm. long at anthesis; anthers rarely with a few hairs apically, usually ebarbate.
    15. Petioles slender, inconspicuously marginate, up to 2 cm. long; leaf margin crenate; flowers racemose-corymbose, flowering and fruiting in same raceme in late flowering stage; rays of hairs of lower surface of leaf appressed or subappressed (Ecuador).....14. *P. Eggersiana.*
15. Petioles marginate, stout, up to 12 mm. long, usually short; leaf margin obscurely crenulate or denticulate, subentire; flowers corymbose or subcorymbose; rays of hairs of lower surface of leaf erect and spreading.
    16. Sepals orange-punctate, pellucid; anthers ovate, 1–1.2 mm. long (Brazil).....15. *P. amazonica.*
    16. Sepals black-punctate; anthers lanceolate, 2–2.2 mm. long.
        17. Hairs of lower surface of leaf distinctly stipitate, as in *P. chiapensis*; filaments about 1.5 mm. long; sepals up to 1.5 mm. long (Guatemala, British Honduras, Honduras) ....16. *P. belizensis.*
        17. Hairs of lower surface of leaf sessile or subsessile; filaments about 1 mm. long; sepals 1–1.2 mm. long (Costa Rica).....17. *P. aeruginosa.*

7. Pubescence of branchlets and undersurface of leaves fine, mostly stellate and usually closely appressed, sometimes subappressed and rather loose, often glabrescent; pubescence usually bizonal on lower surface of leaf blades.
    18. Flowers 4-parted, rarely 5-parted; ovary papillose-pubescent apically or with only a few short hairs.
        19. Inflorescences small, reduced, up to 5 cm. long, essentially glabrous; leaves small, acute, obtusish or acuminate, up to 7 cm. long, 3 cm. wide (Guerrero).....18. *P. tetramera.*
        19. Inflorescences large, pyramidal, up to 15 cm. long, tomentulose; leaves large, rounded-obtuse at apex, up to 13 cm. long, 5 cm. wide (Guerrero or Michoacan).....19. *P. obtusa.*
    18. Flowers strictly 5-parted; ovary tomentose, at least apically, or glabrous and occasionally with scattered hairs apically.
        20. Ovary tomentose, at least apically, the pubescence dense and persistent, sometimes minute, often with intermixed erect hairs apically, these simple or stellate (characteristics of pubescence of pistil difficult to describe, elusive; also see species 31–44).
            21. Inflorescences with thick fleshy branches, the pedicels 1–2 mm. long, the shorter ones as thick as long; ovules partly biseriate (Costa Rica).....20. *P. crassiramea.*
            21. Inflorescences slender, branches not fleshy, the pedicels slender, at least 4 mm. long; ovules uniseriate.

22. Flowers 3 mm. long at anthesis; stamens less than 2 mm. long; inflorescences small, shorter than leaves, the panicles up to 7 cm. long (Costa Rica, Nicaragua, Panama).....21. *P. microcalyx.*

22. Flowers 4–6 mm. long; stamens 2–4 mm. long; inflorescences large, usually at least 10 cm. long.

23. Dorsal punctate area of anthers small with small black glands, pubescence minute as in *P. Donnell-Smithii.*

24. Pedicels 1–4 mm. long; ovary pilose-tomentose apically; style with a few hairs at base; leaves oblong, the veins not impressed above (Veracruz).....22. *P. oblongifolia.*

24. Pedicels up to 8 mm. long; ovary minutely tomentose; style tomentose below, pubescent to above middle; leaves elliptic, the veins impressed above, the surface subbullate (Veracruz).....23. *P. elliptica.*

23. Dorsal punctate area of anthers large, the glands large, black or orange.

25. Flowers subcorymbose-racemose with elongated accrescent rachis bearing flowers and fruits in same raceme in late flowering stage; pubescence very minute, tawny.

26. Pedicels stout, usually 2.5–4 mm. long; anthers mostly orange-punctate dorsally; leaves pellucid-punctate, pubescence bizonal beneath and persistent (Mexico) .....24. *P. brevipes.*

26. Pedicels slender, up to 8 mm. long; anthers black-punctate dorsally; leaves with large black glands, glabrous or glabrescent early (Chiapas, Oaxaca, Guatemala, British Honduras, Honduras) ..25. *P. Donnell-Smithii.*

25. Flowers subcorymbose, the rachis short, with flowering complete before young fruits develop.

27. Sepals less than 1 mm. long; anthers emarginate (Colombia)..26. *P. emarginata.*

27. Sepals 1–2 mm. long; anthers apiculate.

28. Anthers sparsely barbate apically; leaf blades subentire or repand and denticulate, lanceolate or lanceolate-elliptic; ovary conspicuously hirtellous-tomentose; pubescence of branchlets ferruginous (Guatemala, Honduras).. .....27. *P. guatemalensis.*

28. Anthers not barbate; leaf blades conspicuously crenulate-serrulate, oblanceolate or lanceolate; ovary minutely and finely tomentose to middle; pubescence of branchlets tawny (Oaxaca) .....28. *P. oxyphylla.*

20. Ovary glabrous (species 29, 30, 43), or with scattered hairs apically, these hairs when present usually erect and stiff, sometimes pubescent apically as in *P. rosea* (also see species 20–28).

29. Apex of leaves acutish or obtuse; ovules 12–16, partially biseriate; petals densely papillose-tomentose over entire inner surface (Cuba, Mexico, British Honduras, Guatemala) .....29. *P. cubana.*

29. Apex of leaves acuminate or subabruptly acuminate; ovules 4–12, strictly uniseriate; petals glabrous at base on inner surface, or thinly papillose in *P. laxa.*

30. Anthers epunctate dorsally; flowers very small, about 3 mm. long, congested; ovules 10–12, minute; inflorescences terminal or axillary; leaves drying pallid, subcoriaceous (Chiapas).....30. *P. subcoriacea.*

30. Anthers either orange or black-punctate dorsally; flowers 3.5–7 mm. long; ovules 4–9; inflorescences strictly terminal; leaves not drying pallid, usually thin, subcoriaceous only in *P. hondurensis.*

31. Anthers strictly orange-punctate dorsally.

32. The glandular area inconspicuous (Michoacan) .....31. *P. mexicana.*

32. The glandular area large, elevated (Venezuela) .....32. *P. Agostiniana.*

31. Anthers conspicuously black-punctate dorsally; sometimes orange-punctate in *P. lanceolata,* the punctate area prominent.

33. Flowers usually less than 4 mm. long at anthesis; stamens 2–2.75 mm. long.

34. Anthers barbate apically; sepals about 1.2 mm. long (Hispaniola, Cuba).....
.....13. *P. serrulata.*

34. Anthers not barbate; sepals less than 1 mm. long (Mexico and Central America).

35. Filaments about 1 mm. long; pedicels less than 3 mm. long (Nicaragua).....
.....33. *P. Rothschuhiana.*

35. Filaments 1–1.4 mm. long; pedicels usually 1–4, sometimes 6 mm. long.

36. Anthers 1.8–2.2 mm. long, black-punctate dorsally; ovary pilose-tomentose apically (Veracruz)....
.....22. *P. oblongifolia.*

36. Anthers 1.5–1.8 mm. long, orange or black-punctate dorsally; ovary glabrous or sparsely hairy apically, style sparsely hairy at base (Chiapas) . . . . . 34. *P. lanceolata.*

33. Flowers 4–6.5 mm. long at anthesis; stamens 2.5–4.5 mm. long.
    37. Filaments subequaling anthers, 2 mm. long; flowers in mostly 1- to 5-flowered umbels; ovules 8 or 9 (Venezuela) . . . . . 35. *P. laxa.*
    37. Filaments much shorter than anthers; flowers corymbose or subracemose-corymbose; ovules 4–8.
        38. Anthers 3–3.7 mm. long; stamens 3.5–4.5 mm. long.
            39. Leaves subcoriaceous, rugulose above, costal zone loosely stellate-pubescent; sepals 1.2–1.8 mm. long; pedicels 4–7 mm. long (Honduras, Nicaragua) . 36. *P. hondurensis.*
            39. Leaves thin, veins plane above, pubescence of costal zone closely appressed; sepals 1.6–2 mm. long; pedicels 5–9 mm. long (Jalisco, Nayarit) . . . 37. *P. ferruginea.*
        38. Anthers 1.5–2.4 mm. long; stamens 2.5–3.5 mm. long.
            40. Petals up to 7 mm. long; sepals 1.5–2 mm. long; dorsal punctate area of anthers very small; leaves oblong-elliptic (Jalisco) . . . . . 38. *P. rosea.*
            40. Petals 4–5.5 mm. long; sepals 0.8–1.6 mm. long; dorsal punctate area of anthers large, conspicuous; leaves usually widest above the middle.
                41. Sepals minute, 0.8–1 mm. long (Colombia) . . . . . 39. *P. reticulata.*
                41. Sepals 1–1.6 mm. long.
                    42. Leaves pellucid-punctate.
                        43. Leaf blades broadly obovate or oblong-elliptic, up to 8 cm. wide, abruptly acuminate, sinuate (Colombia) . . . . 40. *P. reticulata* var. *sinuata.*

43. Leaf blades oblanceolate or oblanceolate-elliptic, narrow, acuminate, obscurely crenulate (Hispaniola, Puerto Rico) ...41. *P. crenulata.*

42. Leaves with opaque glands, the glands dark red or black.

44. Leaf blades broadly obovate or elliptic, conspicuously dentate, thinly membranaceous; pubescence of leaf minute, appressed, pale (British Honduras) ...42. *P. membranacea.*

44. Leaf blades entire or finely crenulate, not dentate, chartaceous; pubescence of leaf coarser, subappressed, ferruginous.

45. Leaf blades finely crenulate; pistil glabrous (Honduras south to Panama, Colombia and Venezuela)...43. *P. fusca.*

45. Leaf blades entire or subentire; pistil pubescent (Guatemala).....44. *P. oblanceolata.*

SECTION II

Inflorescences axillary

1. Pubescence of branchlets and undersurface of leaves usually coarse; hairs either stellate with erect and spreading rays; or dendroid, either stipitate and bearing apical or lateral branches, or multibranched to base.....Series 11–13.

Series 11–13

2. Margin of leaves dentate with sharp regular teeth; hairs of branchlets and undersurface of leaves simple, or long stipitate and bifid, or stellate apically (Guatemala).....45. *P. vestita.*

2. Margin of leaves entire to crenulate.
   3. Hairs of branchlets and undersurface of leaves stellate or dendroid apically, rays erect and spreading.
      4. Leaves oblanceolate, subacuminate, the acumen obtuse; fruits pubescent over entire surface (Oaxaca) . . .46. *P. Schultesii.*
      4. Leaves lanceolate, acuminate; ovary glabrous below (Guatemala) .....47. *P. pleurobotryosa.*
   3. Hairs of branchlets and undersurface of leaves predominately dendroid, multibranched usually to base.
      5. Leaves obovate, abruptly acuminate, the acumen obtusish; sepals less than 1 mm. long; pedicels 1.5–3 mm. long (Oaxaca, Veracruz) .....48. *P. Oerstediana.*
      5. Leaves lanceolate, elliptic or oblanceolate, apex acuminate; sepals up to 2.5 mm. long; pedicels 3–12 mm. long.
         6. Leaves floccose-tomentose beneath, at least along midvein; petals up to 5 mm. long; filaments 1.5–2 mm. long (Chiapas, Guatemala).....49. *P. reflexa.*
         6. Leaves tomentose beneath over entire surface, not floccose; petals up to 7 mm. long; filaments 2.5–4 mm. long (Chiapas, Guatemala, Costa Rica).....50. *P. calophylla.*
1. Pubescence of branchlets and undersurface of leaves consisting of fine sessile stellate hairs usually with appressed rays (sometimes dendroid in *P. leptopa*) .....Series 14–23.

Series 14–23

7. Anthers usually large, broad and thick, ovate-lanceolate, conspicuously punctate; filaments mostly stout, and shorter than anthers.
   8. Anthers with dorsal area conspicuously black-punctate, usually with large glands; filaments usually stout, usually much shorter than anthers.
      9. Inflorescences short villous; flowers usually 5-merous, rarely 4-merous.
         10. Pistil short villous at apex of ovary and at base of style; petals papillose-tomentose over entire inner surface; stamens up to 3.8 mm. long (Durango, Guerrero, Jalisco, Mexico, Michoacan, Sinaloa).....51. *P. villosa.*
         10. Pistil glabrous; petals glabrous at base within; stamens up to 2.8 mm. long (Oaxaca).....52. *P. Conzattii.*
      9. Inflorescences puberulent or tomentulose; flowers usually 5-merous, rarely 6-merous.
         11. Leaves linear-lanceolate, up to 30 cm. long, 5 cm. wide, apex acuminate, margin crenulate-denticulate (Guatemala)..... .....53. *P. stenophylla.*
         11. Leaves elliptic or oblanceolate, apex subabruptly acuminate, margin entire or obscurely crenulate.
            12. Panicles 2- or 3-branched (Colombia, Venezuela)..... .....54. *P. venezuelana.*
            12. Panicles 1- or 2-branched.

13. Corolla with papillose ring at base within; leaves at first pubescent beneath with fine rather silky closely appressed stellate hairs, or glabrous (Guatemala, Honduras, Nicaragua).....55. *P. vulgata.*

13. Corolla glabrous at base within; leaves at first minutely stellate-lepidote beneath.

14. Ovary minutely villous-tomentose apically and at base of style; petals up to 9 mm. long; stamens 4–4.5 mm. long (Costa Rica).....56. *P. macrantha.*

14. Ovary glabrous, or sparsely short villous apically and at base of style; petals about 7 mm. long; stamens 3–4 mm. long (Costa Rica, Panama).....57. *P. glabra.*

8. Anthers and other floral parts orange-punctate; filaments sometimes subequaling anthers; ovary glabrous except for sparse hairs apically and at base of style (El Salvador).....58. *P. aurantiaca.*

7. Anthers usually small, often slender, commonly lanceolate, sometimes less than 1.5 mm. long, inconspicuously punctate, either concolorous, orange-punctate dorsally, or with scattered minute reddish or black glands; filaments usually slender, often longer than anthers, sometimes only subequaling anthers.

15. Branchlets conspicuously scaly, the epidermis peeling transversely and irregularly (Chiapas, Guatemala).....59. *P. tartarea.*

15. Branchlets not scaly.

16. Ovary and basal half of style densely tomentose, the hairs usually matted.

17. Panicles axillary and terminal, branched to base, the branches very slender; pedicels filiform, 5–9 mm. long; leaves small, less than 10 cm. long, 5 cm. wide (Guatemala).....60. *P. tomentosa.*

17. Panicles axillary, pedunculate, the branches angled; peduncles of umbels and corymbs often greatly reduced; leaves large, up to 25 cm. long, 9 cm. wide.

18. Pedicels short, stout, 3–6 mm. long; flowers 3–5 mm. long.

19. Flowers about 3 mm. long at anthesis; sepals 0.5–0.75 mm. long; petals densely papillose-tomentose over entire inner surface; anthers up to 1.75 mm. long, concolorous or with one to several small black glands dorsally; leaves oblong-lanceolate or oblanceolate, the acumen acute (Guatemala).....61. *P. Skutchii.*

19. Flowers 5 mm. long at anthesis; sepals 1–1.5 mm. long; petals with glabrous area above base on inner surface, papillose at base; anthers up to 2.5 mm. long, punctate dorsally and in lobes with small red-black glands; leaves obovate-elliptic, the acumen obtuse (Chiapas).....62. *P. latifolia.*

18. Pedicels elongate, slender, 5–9 mm. long; flowers up to 7 mm. long (Chiapas, Guatemala).....
.....63. *P. leptopa.*

16. Ovary tomentulose or puberulent apically and at base of style, or finely tomentulose over entire surface, the hairs never matted; ovary sometimes glabrous.

20. Inflorescences simple or 1-branched, small, slender, 3–6 cm. long.

21. Style 2.5 mm. long; ovules 3 or 4, enclosed (Oaxaca)
.....64. *P. tenuis.*

21. Style 3–4 mm. long; ovules usually 7 or 8, apically exposed (Chiapas, Guatemala).....65. *P. subulata.*

20. Inflorescences usually branched two or more times, sometimes 1-branched, mostly over 10 cm. long, usually much larger.

22. Filaments papillose-puberulent or pubescent with short gland-tipped hairs.

23. Filaments papillose-puberulent (Mexico).

24. Sepals subulate, 1–1.4 mm. long; petals inconspicuously punctate; leaves obovate or obovate-elliptic (Oaxaca).....66. *P. Rekoi.*

24. Sepals ligulate, 0.6–1 mm. long; petals prominently punctate in lines; leaves oblanceolate, lanceolate, or oblong-elliptic (Chiapas, Guerrero)
.....67. *P. macronema.*

23. Filaments pubescent with short gland-tipped hairs (Costa Rica, Colombia, Peru, Bolivia).

25. Anthers linear-lanceolate, up to 2 mm. long (Colombia).....68. *P. Candolleana.*

25. Anthers lanceolate, 0.8–1.5 mm. long (Costa Rica, Colombia, Peru, Bolivia).....
.....69. *P. adenanthera.*

22. Filaments glabrous.

26. Leaves mostly obovate, with lateral veins elevated and conspicuous beneath, usually impressed above.

27. Peduncles of corymbs often reduced and very short (Mexico).

28. Acumen of leaf obtusish, the margin of blade entire; pedicels up to 5 mm. long; sepals up to 2 mm. long; filaments 1.3–1.8 mm. long, subequaling or sometimes longer than anthers (Mexico, Oaxaca, Veracruz).....
.....70. *P. psychotrioides.*

28. Acumen of leaf acute, the margin of blade crenulate; pedicels up to 10 mm. long; sepals minute, 0.6–1 mm. long; filaments about 1 mm. long, about one half as long as anthers (Oaxaca, Puebla, Veracruz).....
.....71. *P. melanosticta.*

27. Peduncles or corymbs slender, long, not reduced .....54. *P. venezuelana.*

26. Leaves mostly lanceolate, sometimes oblong-elliptic or oblanceolate, the primary lateral veins very slender and rather inconspicuous.

29. Stamens 3–4 mm. long; anthers lanceolate, 1.75–2.4 mm. long (Panama).....
.....72. *P. Seibertii.*

29. Stamens less than 3 mm. long; anthers small, ovate or lanceolate, 1–1.4 mm. long.

30. Filaments longer than anthers (South America).

31. Filaments 2 mm. long; anthers lanceolate, with one to several small blackish glands dorsally (Bolivia).....
.....73. *P. angustifolia.*

31. Filaments up to 1.4 mm. long; anthers ovate, with small orange-punctate area dorsally (Venezuela).....
.....74. *P. Moritziana.*

30. Filaments shorter than anthers (Chiapas) .....30. *P. subcoriacea.*

1. PARATHESIS TRICHOGYNE Hemsl., Biol. Centr. Am. Bot. 2: 291. 1882. Fig. 1.

Parathesis pallida Lundell, Wrightia 3: 31. 1962.

Tree, 6–20 m. high, branchlets brownish and finely tomentose; leaves long petiolate, the petioles canaliculate, 1–2.5 cm. long; leaf blades obovate, elliptic-oblanceolate or oblanceolate, 6–15 cm. long, 2.5–7 cm. wide, apex abruptly acuminate to obtusely subacuminate, base acute or acuminate, decurrent, chartaceous, entire, pallid, paler beneath and bizonal, pubescent on under-surface with fine small silky stellate appressed hairs, the hairs looser and reddish along costa, glabrescent in marginal zone, costa prominent and elevated beneath, nearly plane above, the lateral veins evident but inconspicuous; inflorescences terminal, paniculate, pyramidal, up to 17 cm. long, 12.5 cm. wide at base, finely tomentose with minute red-brown branched hairs; flowers minutely tomentose and papillose, sometimes rather sparingly, racemose-corymbose or corymbose, the buds at anthesis slenderly pyriform, up to 5 mm. long; pedicels 2–7 mm. long; calyx small, black-punctate, the sepals narrowly triangular or ovate-triangular, less than 1 mm. long, acutish; petals linear-lanceolate, about 5 mm. long, black-punctate in lines, united at base, papillose-tomentose within apically and along margins, otherwise glabrous; stamens 3–4.2 mm. long; anthers versatile, dorsifixed medially, small, slender, lanceolate-oblong, 1.5–2 mm. long, black-punctate dorsally in narrow band, usually with a few small black glands in base of lobes; filaments slender, black-punctate, 2.5–3 mm. long; ovary tomentose, the short style 2.5–3.5 mm. long, sparsely pubescent at base; placenta depressed-globose, apiculate; ovules 8–14 (19), uniseriate, partly biseriate or pluriseriate, partially exposed.

Fig. 1. *Parathesis trichogyne* Hemsl. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower, showing versatile anthers; × 5. 4, Pistil; × 5. Illustrated from isotype, *P. Levy 478* (P), by Vivien Frazier.

HONDURAS.—Morazan: margen de la Quebrada de la Paz, en medio de la floresta de pino-liquidambar de la Montaña Zanquin, alt. 1600 m., May 14, 1950, *Antonio Molina R. 2826* (F), fls. blancas, arbol 8 m., *"uva"*; floresta de pino-liquidambar de la Montaña Zanquin, alt. 1600 m., May 14, 1950, *Antonio Molina R. 2859* (F, GH, LL, US), fls. rosadas, arbor 12 m., *"uva."*

NICARAGUA.—Chontales: vicinity of La Libertad, brushy, partly forested hillside, about 500–700 m., May 29–June 1, 1947, *Paul C. Standley 8816* (F), shrub or tree to 5 m. Zelaya: abandonos de banano, guamilares de segunda clase, Rio Sicsicuas, alt. 0.15 m., Apr. 27, 1949, *Antonio Molina R. 2468* (F, type of *P. pallida*), fls. blanco-rosado, arbol 6–8 m., *"zarcil."* Indefinite: Chontales, alt. 600 m., 1870, *P. Levy 478* (K, type; G, P, isotypes); E. Nicaragua, 1949, *Paul J. Shank 85* (Y), *"zarcil."*

COSTA RICA.—Alajuela: Canton San Carlos, Villa Quesada, alt. 825 m., Mar. 10, 1940, *Austin Smith P2562* (A, F, LL).

Mez in his monograph misinterpreted *P. trichogyne*, evidently basing his description on Guatemalan specimens referable to *P. papillosa* Lundell, for he described the ovary "apice minute lepidotum." Hemsley (l.c.) correctly described the species as having ovary "dense furfuraceo-hirsutum."

The type of *P. trichogyne* has flowers racemose-corymbose and slender pedicels up to 7 mm. long. In the type of *P. pallida*, and the various other collections cited in the original description, the flowers are smaller and corymbose, not conspicuously racemose-corymbose, and the pedicels are shorter, usually less than 4 mm. long. Additional collections are needed to clarify the status of *P. pallida*.

Types of both *P. trichogyne* and *P. pallida* have a bristly tomentose ovary, and placentas with 8–14 (19) ovules, uniseriate, partly biseriate or pluriseriate, and partially exposed. In *Austin Smith P2562* from Costa Rica, there are 16–19 pluriseriate ovules, the most found in any collection of *Parathesis*.

2. Parathesis chrysophylla Lundell, Wrightia 3: 82, *fig. 50*. 1963.
Fig. 2 and Plate 1.

Tree, branchlets stout, closely tomentose with appressed matted hairs; leaves large, with long marginate petioles 1–4 cm. long; leaf blades lanceolate, oblong-elliptic or oblanceolate, usually 12.5–25 cm. long, sometimes up to 45 cm. long, 4.5–9 cm. wide, sometimes up to 14 cm. wide, apex acuminate, or subabruptly short acuminate, base subacuminate and decurrent, entire but undulate, thinly chartaceous, finely pubescent beneath with golden-brown fine closely appressed stellate hairs, bizonal, the marginal zone glabrescent early, the midvein sulcate above, prominently elevated beneath, the lateral veins very slender; inflorescences terminal, pyramidal, paniculate, up to 30 cm. long, minutely rufous-tomentose, the tomentum consisting of a densely papillose lower layer and an upper layer of branched hairs, the glands conspicuous; pedicels up to 7 mm. long; flowers corymbose, finely rufous-tomentose and papillose, up to 6 mm. long at anthesis; sepals triangular, spreading, 1–1.4 mm. long, acute or acuminate, often almost as wide at base as long, punctate; petals lanceolate, about 6 mm. long, black-punctate in lines, papillose-tomentose along edges, otherwise glabrous within; stamens up to 4.5 mm. long; filaments slender, black-punctate, up to 3.5 mm. long; anthers small, versatile, dorsifixed medially, lanceolate-oblong, about 2 mm. long, conspicuously black-punctate dorsally, the glands occasional in lobes; ovary tomentose, the hairs erect; style slender,

Fig. 2. *Parathesis chrysophylla* Lundell. 1, Flowering branch; × ½. 2, Young leaf, lower surface showing bizonal pubescence; × ½. 3, Calyx, spread out; × 5. 4, Flower, showing versatile anthers; × 5. 5, Petal, inner surface; × 5. 6, Pistil; × 5. Illustrated from type, *Carlos Galusser 3* (Y), by Vivien Frazier.

Plate 1. *Parathesis chrysophylla* Lundell. Inflorescence, showing flowers with versatile anthers. Isotype, *Carlos Galusser 3* (US).

up to 5 mm. long, glabrous; placenta depressed-globose; ovules small, 11–14, partly biseriate, partially exposed.

GUATEMALA.—INDEFINITE: Los Andes District, Feb. 25, 1926, *S. J. Record G.3* (US, Y); Bobos District, Feb. 27, 1926, *S. J. Record G.16* (US, Y); Santa Ines, Feb. 25, 1927, *Carlos Galusser 3* (Y, type; US, isotype), small tree, *"camaco."*

BRITISH HONDURAS.—INDEFINITE: without locality, *H. W. Winzerling s.n.* (Y), *"uva"* (a sterile specimen).

HONDURAS. ATLANTIDA: Lancetilla Valley, near Tela, wet forest, alt. 20–600 m., Dec. 6, 1927–Mar. 20, 1928, *Paul C. Standley 53508* (A, F, US), shrub or tree 10–15 ft.; same locality, *56795* (A, F, US), tree 30 ft., petals white; vicinity of San Alejo, at base of hills south of San Alejo near Rio San Alejo, dense wet forest, alt. 150–270 m., Apr. 22–27, 1947, *Paul C. Standley 7797* (F), tree 6 m. COMAYAGUA: near Taulabe, along river, alt. 540–550 m., Apr. 8, 1947, *Paul C. Standley, Louis O. Williams, Antonio Molina R. & Jaime Chacon P. 7003* (F), large shrub or small tree, inflorescence dull red; bosque pino-liquidambar de Montaña La Choca, Cordillera Comayagua, cerca de Coyocutena, alt. 1200 m., May 22, 1956, *Antonio Molina R. 7125* (F), fls. cremas, arbol 5 m. COPAN: bosque abierto y mezclado, 5 kms. al sur de Sta. Rita, alt. 800 m., Apr. 17, 1956, *Antonio Molina R. 6647* (F), fls. cremas, arbusto 3 m. CORTES: matorrales humedos de Pena Blanca, Nacimiento del Rio Lindo, alt. 600 m., Apr. 23, 1956, *Antonio Molina R. 6775* (F), fls. cremas, arbol 4–6 m. YORO: near Progreso, Farm 43, Apr. 20, 1929, *W. D. Hottle 96* (F), tree 60 ft. by 16 inches, *"cuya."* INDEFINITE: Montaña del Carmen, Sierra de Merendon, May, 1950, *Tito Perez Estrada s.n.* (F).

3. PARATHESIS ACUMINATA Lundell, Wrightia 3: 125. 1965. Fig. 3.

Shrub, 3 m. high, branchlets stout, minutely tomentose with fine appressed matted hairs; leaves with marginate petioles 1–2 cm. long; leaf blades oblanceolate or narrowly elliptic-oblong, 9.5–20 cm. long, 3–5.5 cm. wide, apex acuminate, base acute or acuminate and decurrent, firmly chartaceous, at first finely tomentose beneath with closely appressed matted hairs, glabrate, papillate above along midvein in young leaves, the midvein prominent, shallowly sulcate above, the lateral veins slender; inflorescences terminal or axillary, the terminal pyramidal, paniculate, the panicles congested, 8 cm. long, 9 cm. wide at base, the ultimate branches reduced, usually only 2–4 mm. long, minutely tomentose with fine hairs; pedicels short, 2–4 mm. long, stout, densely papillose; flowers umbellate, congested, 4–4.5 mm. long at anthesis, densely papillose; calyx small, the sepals narrowly triangular, scarcely 1 mm. long; petals linear-lanceolate, up to 4.5 mm. long, orange-red lineate, papillose-tomentose within with small glabrous area at base; stamens 2.75 3 mm. long; filaments slender, black-punctate, about 2 mm. long; anthers slender, about 1.5 mm. long, dorsifixed near middle, black-punctate dorsally with small glands; ovary glabrous except at base of style; style about 4 mm. long, pubescent at base and with a few hairs to middle; placenta globose; ovules minute, 11 or 12, uniseriate or crowded and partly biseriate.

EL SALVADOR.—SANTA ANA: matorrales y bosque mixto humedo 20 Kms. al S.O. de Montecristo, alt. 1500 m., May 23, 1963, *Antonio Molina R. & Albertina R. Molina 12576* (F, type; F, isotype). fls. blancas, arbusto 3 m.

The anthers of *P. acuminata*, dorsifixed slightly below the middle, apparently are versatile after anthesis. In the type only a few flowers are open, but some of the anthers are versatile, as typical of the species of this group. It is noteworthy that the inflorescences are either terminal or axillary.

Fig. 3. *Parathesis acuminata* Lundell. 1, Flowering branch with terminal inflorescence; × ½. 2, Flowering branch with axillary inflorescence and terminal bud; × ½. 3, Calyx, spread out; × 5. 4, Flower, showing versatile anthers; × 5. 5, Pistil; × 5. Illustrated from type and isotype, *Antonio Molina R. & Albertina R. Molina 12576* (F), by Vivien Frazier.

4. Parathesis papillosa Lundell, Wrightia 2: 69. 1963. Fig. 4.

Shrub or tree, branchlets rather stout, minutely lepidote; leaves large, long petiolate, the petioles stout, up to 3 cm. long; leaf blades oblanceolate or oblanceolate-oblong, 12–25 cm. long, 3.5–6.5 cm. wide, apex subabruptly acuminate, base acute, decurrent on petiole, entire, obscurely pellucid-punctate, subcoriaceous, minutely pubescent with fine sessile stellate appressed hairs on undersurface, bizonal, glabrescent, costa elevated beneath, the lateral veins fine, evident but not conspicuous; inflorescences terminal, large, paniculate, up to 30 cm. long, 25 cm. wide at base, densely papillose; flowers 4- or 5-parted, densely papillose, corymbose, the buds at anthesis pyriform, about 4 mm. long; pedicels 3–5 mm. long; calyx small, densely black-punctate; sepals ovate-triangular, scarcely 1 mm. long, acuminate; petals lanceolate-linear, about 4 mm. long, united at base, black-punctate in lines, papillose-tomentose within apically and along margins; stamens up to 2.5 mm. long; anthers small, versatile, dorsifixed medially, lanceolate-oblong, 1.2–1.4 mm. long, minutely and sparingly black-punctate above point of attachment of filaments, rarely eglandular; filaments slender, 2 mm. long, usually orange-punctate; ovary minutely papillose apically, the style glabrous; placenta obovoid, ovules 9 13, uniseriate or partly biseriate, partially exposed.

GUATEMALA.—Alta Verapaz: Pansamala, in forest, alt. 3800 ft., June, 1886, *H. von Tuerckheim 921* (US, type; GH, LL, isotypes), bl. weiss; Tactic, Dec. 24, 1896, *Caec. & Ed. Seler 3365* (GH, US). Huehuetenango: vicinity of Maxbal, about 17 miles north of Barillas, Sierra de los Cuchumatanes, alt. 1500 m., July 15–16, 1942, *Julian A. Steyermark 48776* (F, LL), shrub 20–25 ft. tall, petals white, recurved, filaments white, anthers golden, leaves dark green above, pale green beneath, subcoriaceous.

5. Parathesis pyramidalis Lundell, Wrightia 2: 70. 1963. Fig. 5.

Tree, about 8 m. high, branchlets finely tomentose with reddish-brown appressed stellate hairs; leaves with petioles appressed tomentose on undersurface, up to 2 cm. long; leaf blades obovate, oblanceolate or oblanceolate-elliptic, 10–20 cm. long, 4–8 cm. wide, apex rounded and abruptly acuminate, base acute and decurrent, chartaceous, crenulate to subentire, pubescent on undersurface with very fine silky appressed stellate hairs, bizonal, the marginal zone glabrescent, the costa large and conspicuously elevated beneath, nearly plane above, the lateral veins fine and rather inconspicuous on both surfaces; inflorescences terminal, large, pyramidal, the panicles rather open, up to 30 cm. long, 20 cm. wide at base, finely tomentose with dark red-brown stellate hairs; flowers finely tomentose, subcorymbose to subracemose, the buds at anthesis slender, oblong-ovoid, 6 mm. long; pedicels 4–7 mm. long; calyx black-punctate with short lines, sepals ovate-triangular, 1–1.2 mm. long, acuminate; petals linear-lanceolate, up to 7 mm. long, black-punctate in lines, papillose-tomentose within except at base; stamens 4 mm. long; anthers erect at first, becoming versatile after anthesis, lanceolate, 2.2–2.4 mm. long, obtuse at apex, with a very narrow triangular black-punctate area dorsally, with occasional glands in basal lobes; filaments about 2.5 mm. long, black-punctate; ovary tomentose to middle or below with erect hairs, the style pubescent to middle; placenta depressed-globose; ovules 11–14, partly biseriate, partially exposed apically.

Fig. 4. *Parathesis papillosa* Lundell. 1, Flowering branch; × ½. 2, Pedicel and calyx; × 5. 3, Flower, 4-parted, anthers versatile; × 5. 4, Pistil; × 5. Illustrated from isotype, *H. von Tuerckheim 921* (US), by Vivien Frazier.

Fig. 5. *Parathesis pyramidalis* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower, showing versatile anthers; × 5. 4, Pistil; × 5. Illustrated from type, *Herbert H. Smith 1726* (NY), by Vivien Frazier.

COLOMBIA.—Magdalena: Santa Marta, Valparaiso, alt. 3500 ft., Mar. 1898–1899, *Herbert H. Smith 1726* (NY, type; A, BM, F, G, GH, MO, S, US, isotypes).

6. Parathesis panamensis Lundell, Wrightia 2: 69. 1963. Fig. 6.

Tree, branchlets rather stout, red puberulent and papillose at first, glabrescent; leaves slender petiolate, the petioles up to 1.5 cm. long; leaf blades oblanceolate or oblanceolate-oblong, 6.5–11.5 cm. long, 2–4.2 cm. wide, apex subabruptly short acuminate, the acumen obtuse, base acuminate, decurrent, entire, black-punctate, very thin, at first minutely pubescent on lower surface with sessile stellate red subappressed hairs, glabrescent, costa elevated beneath, nearly plane above, the veins fine and reticulate; inflorescences terminal, small, paniculate, 4–7 cm. long, up to 4 cm. wide at base, densely and minutely pubescent with reddish hairs; flowers papillose and puberulent with minute hairs, corymbose, the buds at anthesis slender, pyriform, about 5 mm. long; pedicels 4–6 mm. long; calyx small, densely black-punctate, the sepals subulate, 1.7–2 mm. long; petals lanceolate-linear, 5 mm. long, black-punctate in lines; stamens 4 mm. long; anthers small, versatile, dorsifixed medially, lanceolate-oblong, 1.5 mm. long, black-punctate dorsally with glands extending into basal lobes; filaments slender, 3–3.5 mm. long, black-punctate in lines; ovary puberulent at apex with minute reddish hairs; placenta depressed-globose, minutely apiculate; ovules 5 or 6, erect, enclosed, uniseriate.

PANAMA.—Indefinite: Talamanca Valley, 1927, *G. P. Cooper & G. M. Slater 153* (US, type; Y, isotype).

7. Parathesis columnaris Lundell, Wrightia 3: 62. 1963. Fig. 7 and Plate 2.

Shrub or small tree, twigs sordidly tomentose with red stalked multibranched dendroid hairs, often branched to base, glandular, appearing waxy; leaves with slender canaliculate petioles up to 2 cm. long, glabrous above, tomentose beneath; leaf blades oblanceolate, 10–18 cm. long, 2.5–5 cm. wide, apex subabruptly acuminate, base attenuate and acuminate, decurrent on petiole, thin, chartaceous, pellucid-punctate, entire or irregularly and obscurely crenulate, glabrous above, bizonal beneath and pubescent with red stellate hairs, densely so at first along costa and in costal zone, glabrescent, the lateral veins fine but evident on undersurface, obscure above; inflorescences terminal, paniculate, up to 20 cm. long, equaling or exceeding leaves, red tomentose with short branched hairs, sparingly so on branches; flowers corymbose, densely papillose; pedicels very slender, 4–10 mm. long, papillose; flower buds slender, up to 7 mm. long at anthesis; sepals papillose-puberulent, triangular, 1–1.4 mm. long, acuminate, black-punctate in lines; petals linear-lanceolate, united at base, up to 7 mm. long, attenuate-acuminate, black-punctate in lines, short papillose-tomentose inside over entire surface; stamens 3–4.5 mm. long; filaments slender, 1.3–1.7 mm. long, punctate; anthers erect, linear-lanceolate, 2.3–3.5 mm. long, dorsifixed about one-fourth above base, acutish, black-punctate in narrow band almost to apex and with glands extending into lobes; ovary glabrous or with a few scattered apical hairs, the style slender; placenta broadly ovoid, rounded; ovules 7 or 8, uniseriate, enclosed.

MEXICO.– Chiapas: Mt. Ovando, Apr. 9–12, 1937, *Eizi Matuda 1851* (LL); Santa Isabel, Motozintla, in forest, Sept. 23, 1946, *Eizi Matuda 16406* (F, MEXU, MICH), frutex 2–3 m.;

Fig. 6. *Parathesis panamensis* Lundell. 1, Flowering branches; × ½. 2, Leaf, lower surface; × ½. 3, Pedicel and calyx; × 5. 4, Flower, showing long slender filaments and versatile anthers; × 5. 5, Pistil; × 5. Illustrated from type, *G. P. Cooper & G. M. Slater 153* (US), by Vivien Frazier.

Fig. 7. *Parathesis columnaris* Lundell. 1, Flowering branch; × ½. 2, Leaf, undersurface showing bizonal pubescence; × ½. 3, Calyx, spread out; × 5. 4, Flower with anthers adhering to form a column; × 5. 5, Pistil; × 5. Illustrated from type, *Julian A. Steyermark 33205* (F), by Vivien Frazier.

Plate 2. *Parathesis columnaris* Lundell. Flowers with columnar anthers. Type, *Julian A. Steyermark 33205* (F).

Jilguero, Escuintla, in sandy bush, Mar. 17, 1947, *Eizi Matuda 16468* (F), frutex 5–6 m., 10–15 cm. diam., corolla rosea; Husicil, Escuintla, in wet forest, July 13, 1947, *Eizi Matuda 16406* (MICH); Esperanza, Escuintla, in woods, July 14, 1947, *Eizi Matuda 16704* (F), a tree 5 m., "*cinco negritos*"; north of Huixtla, May 14, 1944, *Efraim Hernandez X. 224* (LL), shrub, 2 m., flowers pink, "*cinco negritos.*"

GUATEMALA.—Amatitlan: Barranca de Eminencia, alt. 1400 pp., Feb. 1892, *John Donnell Smith 1330* (GH, LL, US). Escuintla: Concepcion, alt. 1200 pp., Apr. 1890, *John Donnell Smith 2117* (G, LL, NY, US); Obispo, in lowland forest, Apr. 20, 1937, *W. C. Muenscher 12382* (F, GH), shrub; between Rio Jute and Rio Pantaleon, on road between Escuintla and Santa Lucia Cotz, damp forest, alt. 540–720 m., Jan. 24, 1939, *Paul C. Standley 63600* (F), shrub 10 ft. Quezaltenango: Colomba, in the forest, alt. 2500 ft., Sept. 24, 1934, *Alexander F. Skutch 1287* (A, BM, F, LL, US), shrub 15 ft. high, flowers pink, fruit black, glossy; Finca Pirineos, lower south-facing slopes of Volcan Santa Maria, between Santa Maria de Jesus and Calahuache, deep forest, alt. 1300–1500 m., Dec. 31, 1939, *Julian A. Steyermark 33205* (F, type), shrub 20 ft. tall, corolla tinged with pink; along old road between Finca Pirineos and Patzulin, rocky wooded hillside, alt. 1200–1400 m., Feb. 9, 1941, *Paul C. Standley 86613* (F), shrub or small tree, inflorescence pinkish white, fruit black. Retalhuleu: without locality, May, 1877, *Carl Gustav Bernoulli & Rich. Cario 1985* (K); Barranca del Samala, alt. 1700 pp., Apr. 1892, *John Donnell Smith 1489* (US); Pueblo Nuevo, alt. 800 m., Feb. 1923, *R. Stricker 227* (US), tree 5–6 m., "*cerezo silvestre*"; Rio Talculan, along road 5 km. west of Retalhuleu, thicket along stream, alt. about 300 m., Feb. 17, 1941, *Paul C. Standley 87365* (F), shrub 2–3 m., fls. pinkish white, fruit red, turning black. San Marcos: Rio Mopa, below Rodeo, wet forest, alt. about 600 m., Mar. 14, 1939, *Paul C. Standley 68771* (F, LL), shrub or tree 10–15 ft.; Finca Vergel, near Rodeo, wet forest, alt. about 900 m., Mar. 15, 1939, *Paul C. Standley 68913* (F), *68927* (F), *68972* (F), tree 15–20 ft., petals pale red outside, pale pink within, fruit pale red; near Malacatan, in rivercourse, alt. 400 m., Nov. 20–Dec. 4, 1940, *Verne Grant 574* (A, F, LL), tree 8 m. high, sepals rose-colored, petals white. Santa Rosa: Rio de las Pitas, east of Taxisco, wet forested quebrada, alt. about 225 m., Dec. 2, 1940, *Paul C. Standley 78967* (F, US), shrub 4 m. tall. Suchitepequez: near Pueblo Nuevo, wet thicket, alt. about 750 m., Mar. 1, 1939, *Paul C. Standley 66897* (F), shrub 8 ft.; vicinity of Tiquisate, virgin forest near Santiago farm, alt. 100 m., June 17, 1942, *Julian A. Steyermark 47653* (F), fruit pale pastel pink and green, flowers and pedicels pale pastel pink, "*capulin.*" Indefinite: Mazatenango, *Carl Gustav Bernoulli & Rich. Cario 1988* (K); vicinity of Mazatenango, alt. about 350 m., Feb. 20, 1905, *William R. Maxon & Robert Hay 3499* (US), 15 ft. high.

EL SALVADOR.—Ahuachapan: *Sisto Alberto Padilla 553* (US), "*cerezin*"; "*cerecita.*"

P. columnaris appears to have affinity to *P. lanceolata* Brandeg. of Series 10. Notable in *P. columnaris* are the very slender anthers, as shown in Fig. 7. They are erect, usually adnate and forming a column around the shortly exserted style. The species has very distinctive red matted waxy appearing tomentum and dendroid hairs with numerous short slender branches. The thin, slender, essentially entire leaves with red stellate appressed pubescence on undersurface and the very slender flower buds together with long pedicels further distinguish the species. In late flowering stages, young fruits and flowers are present in the same corymb.

8. Parathesis sessilifolia Donn. Sm., Bot. Gaz. 16: 195. 1891.
Fig. 8 and Plate 3.

Arborescent shrub or tree up to 17.5 cm. diam., 12 m. high, branchlets rather stout, densely villous-tomentose with long stipitate, dark red, shaggy dendroid hairs, with lower layer of stellate hairs, papillose; leaves with thick petioles up to 1.5 cm. long, sometimes appearing subsessile due to decurrent and marginate

Fig. 8. *Parathesis sessilifolia* Donn. Sm. 1, Flowering branch; × ½. 2, Hair from stem, greatly enlarged. 3, Calyx, spread out; × 5. 4, Flower; × 5. 5, Stamen, dorsal view; × 5. 6, Pistil; × 5. Illustrated from type, *H. von Tuerckheim 1443* (US), by Vivien Frazier.

Plate 3. *Parathesis sessilifolia* Donn. Sm. Villous pubescence of inflorescence. Isotype, *H. von Tuerckheim 1443* (GH).

leaf blades, the petioles villous-tomentose, glabrescent above; leaf blades oblanceolate, elliptic or obovate-elliptic, 10–25 cm. long, 3.5–7.5 cm. wide, apex acuminate, the acumen often caudate and falcate, base cuneate and decurrent on petiole, chartaceous, black-punctate, glabrous above, uniformly pubescent over undersurface with red stipitate dendroid hairs, the margin subcrenulate, costa prominent beneath, nearly plane above, the lateral veins slender but conspicuous on undersurface, slightly impressed above; inflorescences terminal, paniculate, usually large and broadly pyramidal, up to 22 cm. long, sometimes small and shorter than leaves, red villous with shaggy stipitate stellate hairs and papillose-puberulent; pedicels slender 3–7 mm. long; flowers corymbose or subracemose-corymbose, 5–7 mm. long at anthesis; the calyx and corolla bristly tomentose with stellate hairs and papillose-puberulent; sepals narrowly triangular, 1.5–2 mm. long, black-punctate; petals black-punctate in lines, united at base, linear-lanceolate, up to 7 mm. long, acutish, short papillose-tomentose along margins and inside above middle, otherwise glabrous; stamens up to 3.5 mm. long; filaments glabrous, up to 1.8 mm. long; anthers erect, dorsifixed below middle, lanceolate-oblong, 2.2–2.8 mm. long, with a narrowly triangular conspicuous black-punctate area above point of attachment and extending into lobes; ovary at apex and base of style with a few scattered erect hairs; style up to 5 mm. long; placenta with 5 or 6 ovules; ovules uniseriate, enclosed; fruits globose, about 7 mm. in diam., densely black-punctate.

MEXICO.—Tabasco: Juarez, near Tenosique, June 14–16, 1939, *Eizi Matuda 3391* (A, F, LL, MICH, MO, NY), treelet, 3 m. high, flowers red.

GUATEMALA.—Alta Verapaz: Coban, alt. 4300 pp., Aug. 1888, *H. von Tuerckheim 1443* (US, type; G, GH, MO, NY, P, US, isotypes); Hacoc, alt. 600 m., May, 1904, *H. von Tuerckheim 8706* (GH, US); Semococh, Mar. 8, 1905, *George P. Goll 262* (NY, US), 15 ft., fls. pink; vicinity of Secanquim, alt. 550 m., Apr. 24, 1905, *H. Pittier 169* (US); Cerro de Agua Tortuga (Sahacoc), vicinity of Cubilgüitz, alt. 350–450 m., Mar. 4, 1942, *Julian A. Steyermark 44599* (F), shrub 15 ft. tall, leaves firmly membranous, deep green above, brownish-green beneath; along Rio Sebol, downstream from Carrizal, alt. 150–200 m., Apr. 19, 1942, *Julian A. Steyermark 45801* (A, F, LL, NY, US), tree 35 ft. tall, leaves deep green above, brownish-green beneath, peduncle with ferruginous pubescence, pedicels deep rose-red, corolla whitish with pale lilac, recurved, nodding, anthers yellow; dense wet limestone forest near Chirriacte, on the Peten highway, alt. about 900 m., Apr. 9, 1941, *Paul C. Standley 91655* (F), shrub; Sebol, in high forest, 12 km. below, bordering Rio Sebol, Apr. 12, 1964, *Elias Contreras 4216* (LL), shrub, 2 in. diam., 12 ft. high, flowers carmine; Sebol, ca. 3 km. nw., on old Peten road, in high forest, Apr. 14, 1964, *Elias Contreras 4280* (LL), shrub, 1 in. diam., 12 ft. high, flowers lilac; Sebol, about 1.5 km. south, in high forest, Apr. 30, 1964, *Elias Contreras 4542* (LL), shrub, 2 in. diam., 14 ft. high, flowers yellow, fruit black; Rio Sebol, ca. 2 km. nw. of Randal Grande, May 8, 1964, *Elias Contreras 4645* (LL), shrub, 1 in. diam., 7 ft. high, flowers white-lilac; Sebol and vicinity, July, 1964, *Elias Contreras 5236* (LL), *5333* (LL), *5390* (LL), arborescent shrub. Izabal: between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 m., Apr. 1, 1940, *Julian A. Steyermark 38513* (F, LL), tree 30 ft. tall, flowers white, tinged brick color. Peten: San Luis, km. 52 of road, in rain forest, July 10, 1959, *C. L. Lundell 16269* (LL), arborescent shrub, 10 ft. high, inflorescence and flowers red.

BRITISH HONDURAS.—El Cayo: Humming Bird Highway, on hillside, in high ridge, Nov. 11, 1954, *Percy H. Gentle 8444* (LL), tree, 2 in. diam.; Humming Bird Highway, 32 Miles Section, in cohune ridge, May 4, 1955, *Percy H. Gentle 8700* (G, LL), tree, 4 in. diam., flowers pinkish with yellow anthers; Humming Bird Highway, 33 Miles Section, in high ridge at base of hill, Oct. 10, 1955, *Percy H. Gentle 8901* (LL), tree 7 in. diam. Stann Creek: vicinity Cockscomb Mts., alt. 500 ft., June 9, 1930, *W. A. Schipp S-121A* (F, MICH), small

tree like shrub growing in forest shade, flowers pink with yellow stamens. TOLEDO: on hilltop beyond Central Camp, Edwards Road beyond Columbia, in high ridge, May 9, 1951, *Percy H. Gentle 7324* (LL), tree, 5 in. diam., flowers pink. INDEFINITE: Forest Home, alt. 200 ft., Nov. 7, 1932, *W. A. Schipp S-405A* (NY), tall shrub growing in forest shade, flowers pink, stamens yellow.

The coarse dendroid hairs, long stipitate to subsessile, give all parts a shaggy appearance. In *Parathesis* this peculiar trichome reaches its ultimate development in *P. sessilifolia.*

9. PARATHESIS CHIAPENSIS Fernald, Proc. Amer. Acad. 36: 497. 1901. Fig. 9.

Arborescent shrub or small tree up to 10 m. high, branchlets rather stout, densely red tomentose with rather fine stipitate or subsessile dendroid hairs; leaves with petioles 5–18 mm. long, the petioles canaliculate, tomentose; leaf blades oblanceolate, elliptic or lanceolate, 6–20 cm. long, 2.5–7 cm. wide, apex subabruptly acuminate, base narrowed and decurrent on the petiole, chartaceous, at first stellate pubescent above, glabrescent, densely and uniformly pubescent on undersurface with fine red, stipitate, stellate hairs, the rays of hairs comparatively short in typical collections, margin closely denticulate, sometimes inconspicuously so or entire at base, the costa elevated beneath, nearly plane above, the lateral veins conspicuous on undersurface, slightly impressed above; inflorescences terminal, paniculate, sometimes small and congested, shorter than leaves, sometimes broadly pyramidal and up to 15 cm. long, puberulent and hirtellous or hirtellous-tomentose with sessile or short-stipitate red, stellate hairs; flowers corymbose or subracemose-corymbose; pedicels rather slender or sometimes clavate, 4–12 mm. long, sometimes up to 17 mm. long, often reflexed; flowers at anthesis 5–7 mm. long, the calyx and corolla densely black-punctate, the corolla in lines; sepals lanceolate, (1.2) 1.8–3 mm. long, acuminate; petals narrowly lanceolate, 5–8 mm. long, papillose-tomentose within apically and along margins; stamens 3–4 mm. long; filaments glabrous, stout, 1.4–1.8 mm. long; anthers erect, ovate-lanceolate, (1.5) 2.2–2.8 mm. long, apiculate, dorsifixed below middle, with conspicuous black-punctate area above attachment and extending down into lobes; ovary glabrous, or with a few scattered erect hairs at apex and at base of style; style slender, up to 5.5 mm. long; placenta subglobose, apiculate; ovules 9, uniseriate, enclosed.

MEXICO.—CHIAPAS: in mountain forest between San Martin and Ococingo, Mar. 13, 1896, *Caec. & Ed. Seler 2226* (GH, isotype; MICH, fragment of isotype); Honduras, near Siltepec, riverside, alt. 1500 m., July 9, 1941, *Eizi Matuda 4416* (A, LL, MO, NY, US), a small tree, 3 m. high; Nuevo Amatenango, riverside, alt. 1300 m., July 17, 1941, *Eizi Matuda 4720* (A, F, LL, MO, NY), shrub, 3–4 m. high; Amatenango del Valle, riverside, alt. 1835 m., June 12, 1945, *Eizi Matuda 5835* (LL), *15835* (F), small tree, 3–4 m. high, flowers rose colored; Pan American highway, 4 miles west of Comitan, banks of a river, near bridge, alt. 5750 ft., Apr. 26, 1949, *Margery C. Carlson 2007* (F, MICH, NY), flowers magenta pink; near Colonia Tizcao, on the Guatemalan border, in huge sweetgum-oak cloud forest, elev. about 4700 ft., Apr. 23, 1955, *L. Irby Davis & Edgar Kincaid 55-56* (TEX); same locality, June 9, 1955, *55-78* (TEX); Municipio of Tenejapa, trail above the Sumidero of Yochib from Pokolum, in Barrio of Sisim, elev. 4800 ft., July 11, 1964, *D. E. Breedlove 6193* (F), tree 20 ft.; Municipio of Tenejapa, on slope with *Quercus* near Pokolum, elev. 5300 ft., Nov. 22, 1964, *D. E. Breedlove 7413* (F), shrub 8 ft. tall. MEXICO: Nanchititla, en bosque mixto de encinos y pinos, ladera humeda, alt. 1900 m., May 26, 1954, *Eizi Matuda 30865* (NY).

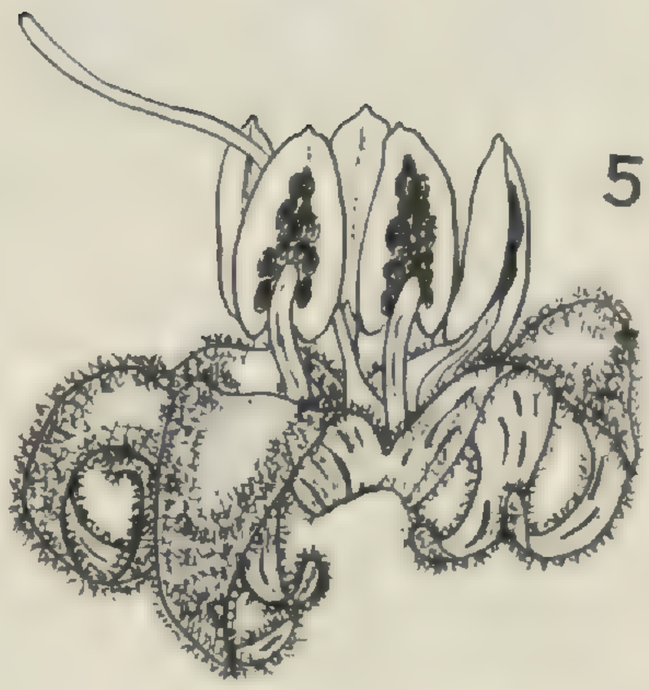


Fig. 9. *Parathesis chiapensis* Fernald. 1, Leaf, undersurface; × ½. 2, Leaf, upper surface; × ½. 3, Corymb; × 2. 4, Pedicel and calyx; × 5. 5, Flower; × 5. 6, Pistil; × 5. Illustrated from isotype, *Caec. & Ed. Seler 2226* (GH), by Vivien Frazier.

GUATEMALA.—Guatemala: 1940, *Ignacio Aguilar 503* (F). Huehuetenango: Chacula, alt. 1600 m., June 27, 1896, *Caec. & Ed. Seler 3134* (GH, K, NY, US); dry slopes between San Ildefonso Ixtahuacan and Cuilco, alt. 1350–1600 m., Aug. 16, 1942, *Julian A. Steyermark 50720* (F, MO), shrub 15 ft. tall, leaves deep green above, paler green beneath, fruit wine-red, as are pedicels; between Las Palmas and Chacula, Sierra de los Cuchumatanes, alt. 1400–1600 m., Sept. 1, 1942, *Julian A. Steyermark 51746* (F, US), tree 30 ft. tall, pubescence ferruginous-brown, "*pish-match*," "*uva*."

P. chiapensis is variable in flower size, but the fine stipitate stellate hairs of the lower leaf surface are distinctive for the species. *Matuda 4416* and *Davis 55–78* have small abnormal flowers, scarcely 5 mm. long, with some abortive anthers scarcely 1.5 mm. long, but the sepals and pubescence are typical. Sepals are usually the longest in the genus, ranging up to 3 mm. in length, but in collections with the smaller abnormal flowers, they may be less than 1.5 mm. long.

Carlson 2007 has a different date and locality on each label, but all the specimens are so uniform that they appear to have been taken from the same shrub.

10. Parathesis rufa Lundell, Wrightia 3: 73. 1963. Fig. 10.

Arborescent shrub or small tree up to 17 cm. diam., branchlets stout, tomentose with rather loose red multibranched dendroid hairs; leaves with stout marginate petioles up to 2 cm. long, the petioles tomentose beneath, stellate pubescent above at first with appressed hairs; leaf blades oblong-elliptic, oblanceolate or obovate, 12–27 cm. long, 5–9 cm. wide, apex subabruptly acuminate or caudate-acuminate, base acute and decurrent, thin at first, becoming subcoriaceous and rugose at maturity, obscurely bizonal, at first pubescent above with stellate hairs, especially along midvein, densely pubescent on undersurface with small fine sessile stellate hairs, the hairs spreading or subappressed in costal zone, usually appressed in marginal zone, glabrescent, the margin usually conspicuously crenulate, costa and lateral veins prominent beneath, slightly impressed above; inflorescences red, terminal, pyramidal, tripinnately paniculate, up to 22 cm. long, papillose-puberulent and tomentulose with red loose or multibranched dendroid hairs; pedicels 3–5 mm. long; flowers subcorymbose, about 5 mm. long at anthesis, papillose-puberulent and finely stellate tomentulose; sepals subulate, 1.75–2.2 mm. long; petals narrowly lanceolate, about 5.5 mm. long, papillose-tomentose within apically and along edges, punctate in lines; stamens about 3 mm. long; filaments stout, glabrous, about 1.3 mm. long; anthers erect, dorsifixed one-third above base, lanceolate-oblong, about 2.4 mm. long, with conspicuous triangular black-punctate area above attachment, the large glands extending into lobes; anthers conspicuously apiculate; ovary ovoid, glabrous, or sparsely hirtellous and papillose apically and at base of style; style 4.5 mm. long; placenta columnar or obovoid; ovules 6 or 7, elliptic-oblong, uniseriate, enclosed; fruits black, depressed-globose, up to 8 mm. in diam. when dry.

MEXICO.—Chiapas: table land about Ocuilapa, alt. 3400–3800 ft., Aug. 21, 1895, *E. W. Nelson 3045* (NY, US).

BRITISH HONDURAS.—Toledo: Toledo, May 27, 1907, *M. E. Peck 918* (GH, NY); Botan Creek, Rio Grande, on riverbank, May 25, 1944, *Percy H. Gentle 4649* (LL, type; TEX, isotype), tree, 7 in. diam., flowers pink, berries black. Indefinite: Forest Home, in forest shade, alt. 200 ft., Nov. 7, 1932, *W. A. Schipp S-405* (A, BM, F, G, MICH, MO, S, UC), tall shrub, flowers pink, with yellow stamens, fruits black.

Fig. 10. *Parathesis rufa* Lundell. 1, Flowering branch, showing leaf with bizonal pubescence on undersurface; × ½. 2, Pedicel and calyx; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *Percy H. Gentle 4649* (LL), by Vivien Frazier.

Schipp S-405 is a mixture of *P. rufa* and *P. sessilifolia* Donn. Sm. The specimens referable to *P. sessilifolia* are designated *S-405A*.

11. Parathesis prionophylla Standl., Proc. Biol. Soc. Wash. 37: 46. 1924. Fig. 11.

Shrub, 2–2.5 m. high, twigs rather stout, densely tomentose with reddish-brown dendroid hairs; leaves with rather stout petioles, the petioles tomentose, glabrescent above, canaliculate, up to 1 cm. long; leaf blades elliptic or oblong-elliptic, 12–16 cm. long, 5.5–7 cm. wide, acute or acuminate, cuneate and decurrent on petiole at base, chartaceous, paler beneath, obscurely bizonal, the pubescence of costal zone consisting of fine reddish stellate hairs, sessile or short stalked, densest along costa, the pubescence of marginal zone of very fine closely appressed stellate hairs, pellucid-punctate, margin coarsely serrate-dentate, the teeth up to 5 mm. long, the costa prominent beneath, nearly plane above, the lateral veins slender, slightly impressed or plane above; inflorescences terminal, many-flowered, rather congested, up to 13 cm. long, pyramidal, tomentose with short reddish-brown stellate hairs; flowers corymbose or subracemose-corymbose; the pedicels 3–5 mm. long; flower buds before anthesis ovoid, up to 7 mm. long, stellate-tomentulose with reddish-brown hairs, the calyx and corolla black-punctate in lines; sepals triangular, 2–2.5 mm. long, acuminate; petals linear-lanceolate, up to 7 mm. long, papillose-tomentose within apically and along edges; stamens 3–3.5 mm. long; filaments glabrous, stout, up to 1.8 mm. long; anthers erect, lanceolate-oblong, up to 2.6 mm. long, apex rounded and apiculate, dorsifixed, the lobes appressed to filaments, with a conspicuous rather small black-punctate triangular area above point of attachment; ovary hirsute apically, not densely so, the style slender, about 5 mm. long, pubescent at base; placenta minute, subglobose, the ovules 6 or 7, uniseriate, enclosed.

MEXICO.—Nayarit: Tepic, Jan. 5–Feb. 6, 1892, *Edward Palmer 1988* (F, GH, NY, US); Arroyo de Jalco, alt. 540 m., Apr. 1, 1923, *Jesus Gonzalez Ortega 52* (US, type; GH, isotype), 2 m., flor rosa, "*capulincillo de faisan*"; 14–17 miles west of Tepic along road over mountain to Jalcocotan, elev. 3000–4000 ft., June 24, 1951, *H. S. Gentry & C. L. Gilly 10670* (LL), shrub 2–2.5 m., flowers pink.

The isotype at Gray Herbarium, with the original Ortega label, bears the number 6.252. The teeth of the leaf margin in the Edward Palmer collection are coarse but irregular, a similar condition being found in some collections of *P. ferruginea* Lundell.

Represented by only three collections, *P. prionophylla*, the northernmost species of the Pacific slope of Mexico, is recognizable by its coarsely serrate-dentate leaves bizonal beneath, and comparatively large sepals. In flower and sepal size, it approaches *P. chiapensis* Fernald. Also, it has many features in common with *P. ferruginea*.

In *P. prionophylla* the sessile or short-stalked stellate hairs of the costal zone of the lower surface of the leaf are loose and spreading.

12. Parathesis parvifolia Lundell, Wrightia 3: 70. 1963. Fig. 12 and Plate 4.

Shrub, branchlets slender, red tomentose with stalked multibranched rather coarse dendroid hairs, glabrescent; leaves with short canaliculate petioles 2–6 mm. long, the petioles tomentose beneath, papillose-puberulent above at first;

Fig. 11. *Parathesis prionophylla* Standl. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from isotype, *Jesus Gonzalez Ortega 52* (GH), by Vivien Frazier.

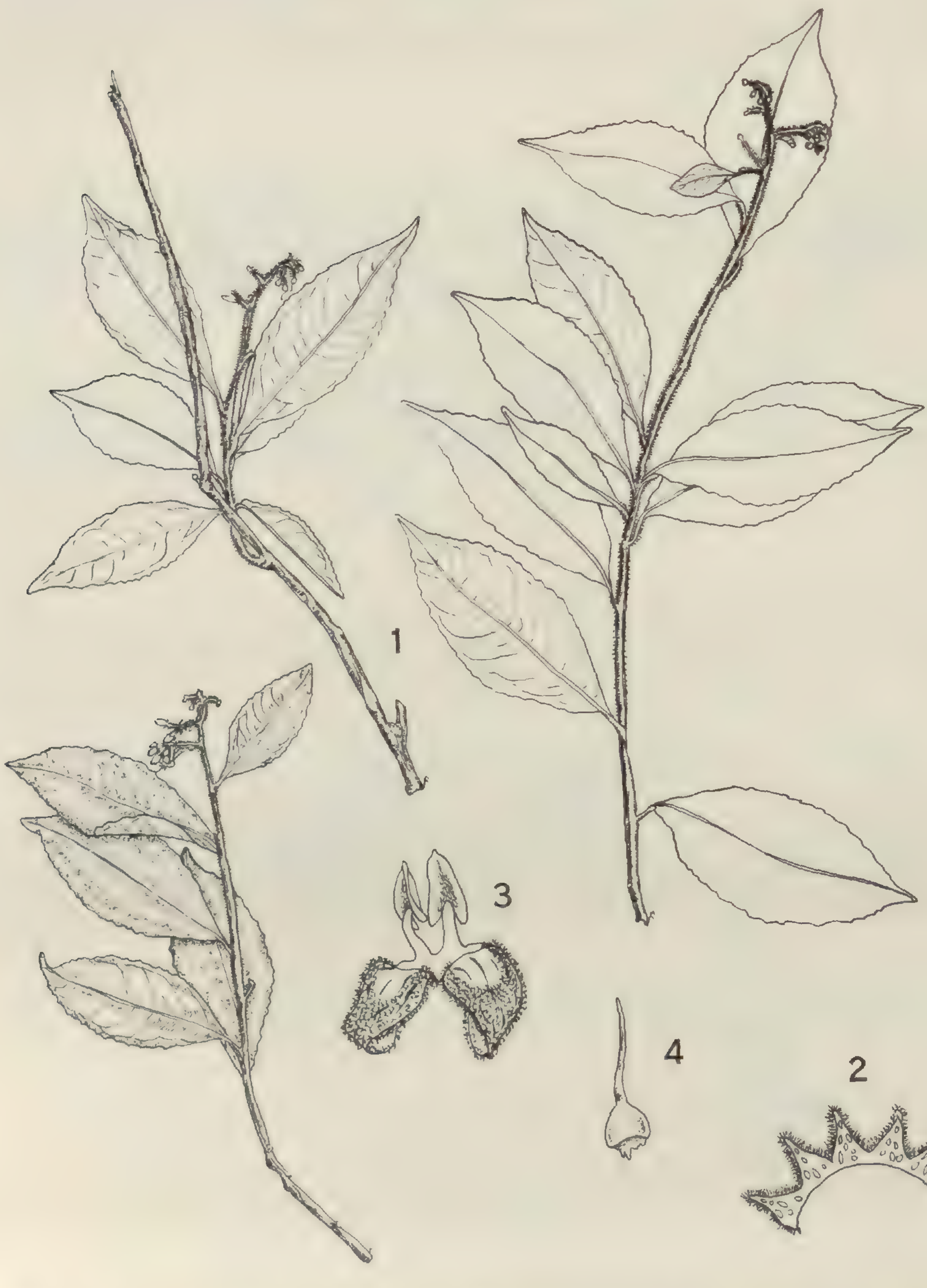


Fig. 12. *Parathesis parvifolia* Lundell. 1, Flowering branches with small terminal inflorescences; × ½. 2, Calyx, spread out; × 5. 3, Petals and stamens; × 5. 4, Pistil; × 5. Illustrated from type, *E. L. Ekman H.189* (S), by Vivien Frazier.

Plate 4. *Parathesis parvifolia* Lundell. Flowering branch, showing small terminal inflorescence and dentate leaves. Type, ***E. L. Ekman H. 189*** (S).

leaf blades lanceolate, oblong-lanceolate, or sometimes oblanceolate, 4.5–7.5 cm. long, 1.7–3.2 cm. wide, apex obtusely acuminate, base acutish and decurrent, chartaceous, paler beneath, inconspicuously black-punctate, glabrous above, pubescent on undersurface with rather coarse stalked or subsessile stellate hairs, the rays of hairs erect or spreading, not bizonal or obscurely so, but some marginal hairs subappressed, the margin rather remotely denticulate-crenulate, midvein elevated beneath, nearly plane above, the lateral veins 7–9, prominent beneath, inconspicuous above; inflorescences terminal, paniculate, unbranched, very small, up to 3.5 cm. long, rather sparingly pubescent with reddish sessile or short stalked multibranched dendroid hairs, the rays of hairs erect or spreading, sparsely papillose-puberulent, the calyx and corolla rather thinly tomentose with sessile stellate hairs; flowers corymbose; pedicels up to 4 mm. long; flower buds before anthesis broadly ovoid, about 3.5 mm. long; sepals triangular, about 1 mm. long, acutish, not black-punctate; petals lanceolate, about 3 mm. long, papillose-tomentose within marginally and above middle, black-punctate in short lines; stamens about 2 mm. long; filaments stout, glabrous, about 1 mm. long; anthers erect, ovate-triangular, about 1.3 mm. long, dorsifixed about two-fifths above base, with conspicuous black-punctate triangular area and with glands extending into lobes, apex ebarbate, or with a few short hairs; ovary glabrous or with an occasional stiff branched hair at apex; style slender, glabrous, 2–2.5 mm. long; placenta depressed-globose, minutely apiculate; ovules 5, obovoid, uniseriate, erect, enclosed.

HAITI.—Sud: Morne de la Hotte, in declivibus sept. orient. in montibus sylvatic., cr. 800 m. alt., June 11, 1917, *E. L. Ekman H.189* (S, type), flor. roseis.

The species is known only from the holotype at Stockholm.

In both *P. parvifolia* and *P. serrulata* the stellate pubescence of the branchlets and sepals is finer than in the related species of the mainland.

13. Parathesis serrulata (Swartz) Mez, Urb. Symb. Antill. 2: 403. 1901. Fig. 13 and Plates 5, 6, 7.

Ardisia serrulata Swartz, Prodr. 48. 1788.

Shrub or small tree, branchlets slender to stout, tomentose with dark-red stellate hairs; leaves with petioles 5–12 mm. long, sometimes appearing subsessile, the blade prominently decurrent on the petiole, the petiole canaliculate, glabrescent above, tomentose beneath; leaf blades obovate-elliptic or oblanceolate, usually 6–10 cm. long, rarely up to 14 cm. long, 2.8–6 cm. wide, apex subabruptly acuminate, the acumen obtusish, base cuneately narrowed, chartaceous, paler beneath, pubescent on lower surface with fine stellate sessile hairs with long rays, these usually appressed, indistinctly bizonal, the marginal zone glabrescent, the margin crenulate, costa prominent beneath, nearly plane above, the lateral veins slender but conspicuous on undersurface, slightly impressed above; inflorescences terminal, paniculate, usually small, sometimes up to 15 cm. long, only the basal branches with secondary branches, the apical simple, pubescent with red stellate sessile hairs, the hairs spreading, and papillose-puberulent, the pedicels and flowers finely red tomentose with spreading stellate hairs; flowers corymbose or racemose-corymbose, stellate-tomentose; pedicels slender, 2.5–6 mm. long; calyx and corolla black-punctate; flower buds before

Fig. 13. *Parathesis serrulata* (Sw.) Mez. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Petal, inner surface; × 5. 5, Stamen, showing anther barbate at apex and with dorsal line of hairs; × 5. 6, Pistil; × 5. 7, Dried fruit; × 2½. Flowering branch and flowers illustrated from *Geo. V. Nash 435* (F), fruit from *E. J. Valeur 579* (F), by Vivien Frazier.

Plate 5. *Parathesis serrulata* (Sw.) Mez. Type, *O. Swartz s.n.* (S).

Plate 6. *Parathesis serrulata* (Sw.) Mez. Flowers corymbose in bud, *E. L. Ekman 3776* (US).

Plate 7. *Parathesis serrulata* (Sw.) Mez. Flowers racemose-corymbose in late flowering stage, *George V. Nash 435* (NY).

anthesis about 3.5 mm. long, ovoid; sepals narrowly triangular, about 1.2 mm. long, acuminate, black-punctate; petals linear-lanceolate, about 3.5 mm. long, papillose-tomentose within along edges and apically; stamens 2.4–2.75 mm. long; filaments stout, glabrous, 1.2 1.4 mm. long; anthers erect, dorsifixed about one-third above base, lanceolate, 1.5–2 mm. long, with conspicuous black-punctate narrowly triangular area above point of attachment and extending into lobes, hairy dorsally along a medial line above middle, the conspicuously apiculate apex barbate; ovary at apex and at base of style rather sparingly hirsute with branched hairs; style slender, about 3 mm. long, enlarged at base; placenta subglobose, apically acicular; ovules 6 or 7, erect, uniseriate, enclosed; fruits globose, about 7 mm. in diam. when dry.

CUBA.—ORIENTE: Vista Alegre, Maisi, July 12, 1938, *Bro. Leon & W. Seifriz 18207* (NY).

HAITI.—Borgne to Petit Borgne, on bank along road, sea level, Aug. 15, 1903, *George V. Nash 435* (F, NY), fls. & fr. purple; road from Camp No. 1 to La Barriere Couchant, mountain slope, alt. 2500 ft., July 17, 1905, *George V. Nash & Norman Taylor 1113* (NY), small tree, fls. purple; Massif des Cahos, Petite-Riviere de l'Artibonite, Perodin, on laterite, ca. 900 m., Mar. 6, 1925, *E. L. Ekman 3422* (S), frutex; Massif du Nord, St. Louis du Nord, valley of Riviere Barre, edge of the river, ca. 15 m., Apr. 13, 1925, *E. L. Ekman 3776* (G, NY, S, US), frutex 1.5–2 m. altus; Massif du Nord, Riviere St. Anne, ca. 50 m., June 20, 1925, *E. L. Ekman 4375* (S).

DOMINICAN REPUBLIC.—SABANETA: Prov. of Monte Cristy, Leonor, swampy soil, alt. 600–700 m., Dec. 7, 1930, *E. J. Valeur 579* (C, F, MICH, MO, UC, US), small shrub, fl. red, berries blackish. SAN JOSE: Prov. Santiago, Arr. Loma Bajita, virgin forest, alt. 700–800 m., May 27, 1933, *E. J. Valeur 882* (C, F, MO, NY, US), small tree, fl. reddish, berry black; Loma Bajita-Jicome Road, open pines, alt. 700–800 m., June 17, 1933, *E. J. Valeur 1023* (LL, NY, US), shrub, fl. red & yellow.

HISPANIOLA.—INDEFINITE: without locality, *O. Swartz s.n.* (S, type); without locality, 1802, *A. Poiteau s.n.* (G).

Of the West Indian species, *P. serrulata* may be distinguished by its hairy anthers, conspicuously barbate at apex and with a medial line of stiff hairs dorsally above middle. The comparatively small obovate-elliptic crenulate leaves with fine spreading stellate pubescence beneath, and paniculate inflorescences bipinnate only at base are other characteristics of note.

14. PARATHESIS EGGERSIANA Mez, Pflanzenreich IV. 236: 176. 1902.
Fig. 14 and Plate 8.

Shrub or tree, up to 4 m. high, twigs rather stout, tomentose with red stipitate dendroid and stellate hairs; leaves with petioles up to 2 cm. long, the petioles stellate pubescent beneath, inconspicuously marginate; leaf blades obovate-elliptic or oblanceolate-elliptic, 11–17 cm. long, 5 6 cm. wide, apex subabruptly acuminate, base cuneate and decurrent on the petiole, membranaceous, paler beneath, pellucid-punctate, pubescent on lower surface with red stellate hairs, those of costal zone subsessile, those of marginal zone sessile and appressed, the zones not conspicuous, the margin conspicuously crenate, the costa elevated beneath, slightly impressed above, the lateral veins rather prominent beneath, finely reticulate on upper surface; inflorescences terminal, broadly and laxly pyramidal, up to 15 cm. long, red tomentose with short stellate hairs; flowers corymbose or racemose-corymbose, bristly red tomentose with stellate hairs; pedicels slender, 4–7 mm. long; flower buds before anthesis ovoid, about 5 mm.

Fig. 14. *Parathesis Eggersiana* Mez. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petals and stamen, showing barbate apex of anther; × 5. 4, Pistil; × 5. Illustrated from isotype, *H. F. A. Eggers 14240* (US), by Vivien Frazier.

Plate 8. *Parathesis Eggersiana* Mez. Flowers racemose-corymbose at apex of branch in late flowering stage, corymbose below in earlier stages. Isotype, *H. F. A. Eggers 14240* (US).

long, the calyx and corolla black-punctate; sepals narrowly triangular, 1.3–1.5 mm. long, attenuate-acuminate; petals linear-lanceolate, 4–4.5 mm. long, papillose-tomentose within along edges and apically, united at base; stamens 2.2–2.5 mm. long; filaments glabrous, stout, 1.2–1.4 mm. long; anthers erect, sparsely barbate apically, dorsifixed about one-third above base, oblong-lanceolate, 1.8–2 mm. long, apiculate, conspicuously black-punctate, the glands extending below point of attachment, the lobes short with narrow sinus; ovary and style glabrous, or with occasional hairs at apex of ovary, the style slender, about 3 mm. long; placenta obovoid; ovules 6 or 7, uniseriate, enclosed.

ECUADOR.—INDEFINITE: Balao, in silvis, Jan. 1892, *H. F. A. Eggers 14240* (A, US, isotypes), frutex 8′ alt., florib. violaceis.

15. PARATHESIS AMAZONICA Mez, Fedde Rep. Spec. Nov. 16: 416. 1920. Fig. 15.

Twigs rather slender, densely tomentose with dark red stipitate dendroid and stellate hairs; leaves with petioles up to 1.2 cm. long, the petioles canaliculate, red tomentose, glabrescent above; leaf blades elliptic or oblong-elliptic, 9–18 cm. long, 3–6 cm. wide, apex subabruptly acuminate, base cuneate and decurrent on the petiole, chartaceous, pellucid-punctate, paler beneath, glabrescent above, uniformly pubescent on lower surface with red short-stalked or subsessile stellate hairs, the rays of hairs erect and spreading, the margin minutely crenulate; inflorescences terminal, laxly pyramidal, up to 15 cm. long, tomentose with short dark red stellate hairs; flowers subcorymbose, the terminal subracemose, densely tomentose with short red stellate bristly hairs; pedicels 4–6 mm. long; flower buds before anthesis about 4 mm. long; sepals triangular, 1–1.2 mm. long, acuminate, orange-punctate; petals united at base, linear-lanceolate, about 3.5 mm. long, linear punctate, papillose-tomentose within along edges and apically; stamens small, 2–2.2 mm. long; filaments glabrous, about 1–1.4 mm. long, stout; anthers erect, ovate, 1–1.2 mm. long, dorsifixed about one-fourth above base, conspicuously black-punctate above point of attachment, the punctate area small; ovary and style entirely glabrous, the style slender, about 3 mm. long; placenta ellipsoid; ovules 5, uniseriate, enclosed.

BRAZIL.—INDEFINITE: Rio Acre, Sta. Seringal S. Francisco, Oct. 1911, *E. Ule 9686* (K, isotype), bl. purpurn.

P. amazonica, which has anthers among the smallest in the genus, is notable for the dark red dense bristly tomentum of the inflorescences, very finely crenulate leaves uniformly stellate pubescent on lower surface with mostly stipitate hairs, and completely glabrous ovary and style.

A South American collection of M. A. Bonpland at Paris bearing the name, *Ardisia ferruginea* Kunth, may be the type of that taxon. The specimen is sterile, but it appears to represent a form of *P. amazonica*. The binomial is not to be confused with *Parathesis ferruginea* Lundell, a species of Mexico.

16. PARATHESIS BELIZENSIS Lundell, Wrightia 3: 61. 1963. Fig. 16.

A small tree, branchlets rather stout, tomentose with rather coarse dark red short stipitate dendroid and stellate hairs; leaves with stout marginate petioles up to 1 cm. long; leaf blades oblong-elliptic or lanceolate-elliptic, 10–20 cm. long, 4–6.5 cm. wide, apex subabruptly acuminate, base narrow and acute,

Fig. 15. *Parathesis amazonica* Mez. 1, Flowering branches; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from isotype, *E. Ule 9686* (K), by Vivien Frazier.

Fig. 16. *Parathesis belizensis* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *Percy H. Gentle 2779* (MICH), by Vivien Frazier.

decurrent, thinly chartaceous, rather obscurely denticulate, glabrescent early above, uniformly stellate pubescent over entire surface beneath with red stipitate hairs, the costa prominent beneath, slightly impressed above, the primary lateral veins slender and elevated beneath, plane above; inflorescences terminal, shorter than leaves, paniculate, 12 cm. long, red-tomentose with subsessile rather coarse multibranched dendroid hairs; pedicels short, 2–4 mm. long, papillose and sparingly stellate-hirtellous; flowers corymbose, crowded, bristly tomentose with short red stellate hairs and papillose, up to 4.5 mm. long at anthesis; sepals narrowly triangular, up to 1.5 mm. long, acuminate, black-punctate; petals linear-lanceolate, 4.5 mm. long, black-punctate in lines, papillose-tomentose within along edges and apically; stamens less than 3 mm. long; filaments about 1.5 mm. long; anthers erect, dorsifixed one-third above base, elliptic-lanceolate, about 2.2 mm. long, sometimes with a few short reddish hairs apically, prominently black-punctate, with glands extending down into lobes; ovary ovoid, tapering into style, with scattered short erect hairs apically; style about 3 mm. long; ovules 6, uniseriate, enclosed; fruits globose, borne on stout pedicels about 5 mm. long.

GUATEMALA.—Alta Verapaz: Sebol, ca. 500 m. east, in *corozal*, Apr. 22, 1964, *Elias Contreras 4464* (LL), shrub, 2 in. diam., 12 ft. high, fruit black.

BRITISH HONDURAS.—Stann Creek: Middlesex, in high ridge, May 3, 1939, *Percy H. Gentle 2779* (MICH, type; A, isotype), a small tree.

A sterile collection from Honduras, *Christine von Hagen & Wolfgang von Hagen 1328* (F, NY), and a fruiting collection from Guatemala, *Julian A. Steyermark 39917* (F, NY), appear to be referable here.

17. Parathesis aeruginosa Standl., Journ. Wash. Acad. Sci. 17: 526. 1927. Fig. 17.

Arborescent shrub, up to 3 m. high, branchlets stout, bristly tomentose with dark red, coarse, stipitate, stellate hairs; leaves with petioles 3–12 mm. long, the petioles red tomentose beneath, canaliculate and glabrescent above; leaf blades oblanceolate or elliptic-oblong, 9–20 cm. long, 4–7 cm. wide, apex subabruptly acuminate, base cuneately narrowed and decurrent on the petiole, chartaceous, black-punctate, uniformly pubescent on lower surface with coarse stellate red hairs, these sessile, or subsessile, with long spreading and erect rays, sometimes obscurely bizonal, the marginal hairs appressed, rather obscurely crenulate, the costa elevated beneath, nearly plane above, the lateral veins slender, slightly impressed above; inflorescences terminal, paniculate, pyramidal, up to 15 cm. long, ferruginous-tomentose with sessile stellate hairs and papillose-puberulent; flowers corymbose, 3.5–4 mm. long at anthesis, stellate, hirtellous and papillose-puberulent, the calyx and corolla black-punctate; pedicels short, 2–5 mm. long; sepals narrowly triangular, 1–1.2 mm. long; petals narrowly lanceolate, 3.8–4 mm. long, papillose-tomentose within along edges and apically; stamens 2.5 mm. long; filaments glabrous, about 1 mm. long; anthers erect, about 2 mm. long, with conspicuous black-punctate triangular area above attachment and extending into lobes, dorsifixed about one-third above base, apex apiculate; ovary glabrous; style slender, 3.5 mm. long; placenta minute; ovules 5–7, uniseriate, enclosed.

Fig. 17. *Parathesis aeruginosa* Standl. 1, Flowering branch; × ½. 2, Leaf, showing undersurface; × ½. 3, Calyx, spread out; × 5. 4, Flower; × 5. 5, Pistil; × 5. Illustrated from type, *A. V. Tonduz 17659* (US), by Vivien Frazier.

COSTA RICA.—Alajuela: Buissons a Santiago pres S. Ramon, alt. 1000–1100 m., June 18, 1901, *Alberto M. Brenes 14388* (GH, K, US); Bois de Tremedal, pres San Ramon, alt. 1300–1400 m., Apr. 14, 1913, *Adolfo Tonduz 17659* (US, type; F, K, LL, MICH, UC, isotypes); San Ramon, 1927, *Alberto M. Brenes 5452* (F, LL, NY); Canton San Ramon, Barranca de S. Ramon, open forest, alt. 1000 m., Feb. 5, 1940, *Austin Smith P2363* (A, US), shrub, erect, 3 m., leaves chartaceous, dark opaque green, inflorescence dull cinnamon brown, ovary dull reddish, perianth pale greenish-yellow. Indefinite: *M. Endres 231* (K).

The very small flowers, short pedicels, combined with the uniformly stellate-hispidulous indument of the lower leaf surface well-mark the species. *P. aeruginosa* is perhaps closest to *P. belizensis* Lundell, which can be recognized by its larger flowers, the fine differences in indument, and ovary with scattered erect hairs apically.

18. Parathesis tetramera Bullock, Hooker's Ic. Plant. 34, *pl. 3398*. 1939. Plate 9.

Tree, 2 m. high, the apices of growing branchlets finely ferruginous-tomentose, entirely glabrous very early, punctate; leaves small, with slender petioles 3–10 mm. long, the petioles glabrous, canaliculate; leaf blades oblong-elliptic, lanceolate, or oblanceolate-elliptic, up to 7 cm. long, 3 cm. wide, apex acute, obtusish or acuminate, the base cuneate and decurrent on the petiole, margin entire, chartaceous, entirely glabrous but with leaf buds finely ferruginous-tomentose, pellucid-punctate, the costa elevated beneath, slightly impressed above, the lateral veins slender; inflorescences terminal, paniculate, up to 5 cm. long, punctate, essentially glabrous; pedicels very slender, 5–8 mm. long, sparingly papillose-puberulent; flowers 4-parted, rarely 5-parted, corymbose or sometimes solitary, the calyx and corolla punctate, the corolla densely so in black lines; flower buds before anthesis slender, about 5.5 mm. long; sepals minute, triangular, up to 1 mm. long, sparingly papillose-puberulent; petals united at base, linear-oblong, about 6 mm. long, narrowed above, obtuse, finely papillose-puberulent outside, short papillose-tomentose within over entire surface except at base; stamens about 4 mm. long; filaments thick, glabrous, black-punctate in lines, 2.5 mm. long; anthers erect, lanceolate, about 3.5 mm. long, narrowed to the obtuse apex, dorsifixed one-third above base, with a conspicuous black-punctate area above point of attachment, with occasional glands extending into lobes; ovary densely punctate, sparingly papillose-pubescent at apex and at base of style; the style slender, punctate in lines, up to 4.5 mm. long; placenta depressed-obovoid; ovules 8–10, uniseriate, enclosed; fruits red, globose, drying 6 mm. in diam., the style persistent.

MEXICO.—Guerrero: Montes de Oca, Pasion, in woods, alt. 500 m., Oct. 8, 1937, *Geo. B. Hinton 10779* (K, type; F, GH, LL, MO, US, isotypes), tree 2 m.; same locality, in oak forest, alt. 600 m., Oct. 6, 1937, *Geo. B. Hinton 10769* (F, GH, LL, MO, US), tree 2 m., fruit red.

A remarkable species, which is notable for its 4-parted, rarely 5-parted flowers, small glabrous leaves, small inflorescences, and large erect stamens.

19. Parathesis obtusa Lundell, Wrightia 3: 83, *fig. 52*. 1963. Fig. 18.

Small tree, 4 m. high, branchlets slender, at first tomentulose with fine stellate closely matted sessile hairs, glabrescent; leaves with short petioles up to 1 cm. long, the petioles at first papillose-puberulent above, tomentulose beneath;

Plate 9. *Parathesis tetramera* Bullock. Flowering branch. Isotype, *Geo. B. Hinton 10779* (GH).

Fig. 18. *Parathesis obtusa* Lundell. 1, Flowering branch; × ½. 2, Pedicel and calyx; × 5. 3, Flower, 4-parted; × 5. 4, Pistil; × 5. Illustrated from type, *E. Langlasse 963* (US), by Vivien Frazier.

leaf blades oblanceolate or oblanceolate-elliptic, up to 13 cm. long, 5 cm. wide, apex rounded-obtuse, base cuneate, entire, very thin, membranaceous, at first sparingly tomentulose on lower surface with sessile silky multi-branched hairs, glabrescent early, papillose-puberulent at first at base above, the midvein slightly impressed above, elevated beneath, the primary lateral veins slender and evident on both surfaces; inflorescences terminal, pyramidal, bipinnately paniculate, up to 15 cm. long, finely and sparingly tomentulose; pedicels slender, puberulent, up to 7 mm. long; flowers corymbose, 4-parted, up to 7 mm. long at anthesis; sepals minute, ovate, about 1 mm. long, puberulent, pellucid-punctate; petals linear-lanceolate, up to 7.5 mm. long, finely papillose-puberulent on outer surface, papillose-tomentulose over entire inner surface, orange-red punctate in lines; stamens up to 5.5 mm. long; filaments thick, up to 2.3 mm. long, orange-red punctate; anthers erect, linear-lanceolate, up to 4.5 mm. long, dorsifixed about one-third above base, orange-red punctate dorsally; ovary ovoid, glabrous except for a few short hairs at apex; style sparingly short-villous, up to 5 mm. long; placenta uniseriate; ovules 8, enclosed.

MEXICO.—Guerrero or Michoacan: Los Valles, alt. 800 m., Mar. 24, 1899, *E. Langlasse 963* (US, type; G, isotype).

Like *P. tetramera* Bullock of Guerrero, *P. obtusa* has 4-parted flowers. Although the two appear to be related, *P. obtusa* has thinner much larger rounded-obtuse leaves puberulent above at base, and at first tomentulose on undersurface. The pyramidal inflorescences are up to 15 cm. long, contrasted with the few-flowered reduced inflorescences of *P. tetramera*. Also, the anthers are larger and less conspicuously punctate in *P. obtusa*.

20. Parathesis crassiramea Lundell, Wrightia 3:30. 1962. Fig. 19 and Plate 10.

Small tree, 5 m. high, the twigs thick, the buds and young growth covered at first with minute closely appressed indument, glabrescent; leaves glabrous at maturity, long petiolate, the petioles slender, canaliculate, 1–2.5 cm. long; leaf blades lanceolate or oblong-lanceolate, 8.5–15 cm. long, 3.5–5.8 cm. wide, apex acuminate, the acumen obtusish, base acutish, chartaceous, essentially entire, punctate, lateral veins impressed above, conspicuous on undersurface; inflorescences terminal, the rachis and branches fleshy, thick, covered with minute closely appressed brownish indument, the panicles up to 11 cm. long, 7 cm. wide at base, flowers subcorymbose; pedicels very thick, 1–2 mm. long; flowers in bud 5–6 mm. long; calyx finely tomentose, sepals triangular, about 1.4 mm. long; petals finely papillose-tomentose within, linear-lanceolate, about 6 mm. long, black-punctate with lines, united at base about 1.8 mm.; filaments glabrous, stout, about 1.8 mm. long; anthers erect, large, ovate-oblong, about 2.5 mm. long, dorsifixed above base, conspicuously black-punctate; ovary ovoid, finely tomentose, the style slender, about 5 mm. long; placenta uniseriate or partially biseriate, the ovules 8 or 9.

COSTA RICA.—Alajuela: Canton Alfaro Ruiz, La Peña de Zarcero, cloud forest, July 11, 1938, *Austin Smith 896* (LL, type; A, F, NY, isotypes), tree, 5 m., bark pale brown, leaves with deep venation producing rugose effect, inflorescence pink, petals fleshy and reflexed.

In the genus *Parathesis*, no other species has thick fleshy inflorescence branches and pedicels like *P. crassiramea*. The pedicels are about as thick as they are long

Fig. 19. *Parathesis crassiramea* Lundell. 1, Flowering branch; × ½. 2, Branch of inflorescence; × 2. 3, Pedicel, calyx and pistil; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from isotype, *Austin Smith 896* (F), by Vivien Frazier.

Plate 10. *Parathesis crassiramea* Lundell. Flowering branch, showing short thick pedicels. Isotype, *Austin Smith 896* (F).

with no constriction below the calyx. The long petioles, large ovate-oblong erect anthers, and finely tomentose ovary distinguish it further. The 8 or 9 ovules are partially biseriate, but this may be due to dislocation of ovules from pressure applied in drying the specimens.

21. Parathesis microcalyx Donn. Sm., Bot. Gaz. 48: 295. 1909. Fig. 20.

Shrub or small tree, twigs slender, covered with minute reddish and closely appressed tomentum; leaves small, slender petiolate, the petioles up to 2 cm. long, canaliculate, with fine appressed stellate tomentum beneath, glabrous above; leaf blades oblanceolate or oblanceolate-oblong, 7.5–11 cm. long, 2.6–4 cm. wide, base acuminate, apex subabruptly acuminate, thin, paler beneath, essentially entire, pellucid-punctate with short horizontal linear glands, glabrous above, with fine stellate reddish tomentum on lower surface in narrow costal zone, the lateral veins very fine on both surfaces; inflorescences terminal, small, shorter than leaves, pyramidal, slender branched, up to 7 cm. long, covered with minute reddish closely appressed tomentum; flowers few, subcorymbose, borne on slender finely reddish-tomentose pedicels 1.5–4 mm. long; flower buds ovoid, about 3 mm. long, the tomentum fine, reddish; calyx finely reddish-tomentose, black-punctate, the sepals about 1 mm. long, united at base; petals linear-punctate, narrowly triangular, about 3 mm. long, united at base, papillose-tomentose within along edges and apically; stamens about 1.75 mm. long, the filaments glabrous, subequaling anthers, the anthers erect, ovate, densely black-punctate dorsally, dorsifixed about one-third above base; ovary ovoid, black-punctate, covered with minute reddish tomentum; style slender, 2.5–3 mm. long, sparsely hairy; ovules 5–7, uniseriate; fruits blackish-purple when ripe, in dense clusters, subglobose, drying 4–6 mm. in diam.

COSTA RICA.—Cartago: Atirro, alt. 600 m., Apr. 1896, *John Donnell Smith 6642* (GH, US). Limon: Rio Valle Estrella, bosque lluvioso de Montaña Andromeda, Oct. 26–28, 1951, *Paul J. Shank & Antonio Molina R. 4526* (F, GH), shrub, 4 m. Indefinite: Comarca de Limon, Llanuras de Santa Clara, La Colombiana, alt. 200 m., June, 1899, *H. Pittier 7591* (US, type); *H. Pittier 13410* (US); San Jose de Costa Rica, Tucurrique, Rio de las Vueltas, alt. 635 m., Jan. 1899, *Adolfo Tonduz 12839* (US), small tree.

NICARAGUA.—Zelaya: montañas y bosques lluviosos entre Toro Bayo y Esquipulas, alt. 130 m., Nov. 20, 1951, *Paul J. Shank & Antonio Molina R. 4621* (F), shrub, 2 m.; bosque lluvioso y breñoso de Montaña Esquipulas, alt. 130 m., Nov. 22, 1951, *Paul J. Shank & Antonio Molina R. 4699* (F), shrub, 2–3 m.; bosque lluvioso de montañas de Esquipulas y Aleman, drenaje de Rio Aleman, alt. 150 m., Nov. 27–29, 1951, *Paul J. Shank & Antonio Molina R. 4809* (F), *4821* (F, GH), shrub, 1 or 2 m.; matorrales y potreros humedos, drenajes de los Rios Punta Gorda, Aleman y Zapote, alt. 30 m., Dec. 5, 1951, *Paul J. Shank & Antonio Molina R. 4985* (F, GH), shrub, 1–2 m.

PANAMA.—Darien: vicinity of El Real, Rio Tuira, trail between Rio Escucha Ruido & Rio Tuira, June 26, 1959, *W. L. Stern, K. L. Chambers, J. D. Dwyer & J. E. Ebinger 571* (MO), small tree, 5 ft. tall, 1 in. diam., buds red. Indefinite: Gatun, Nov. 1859, *Sutton Hayes 207* (NY); June 4, 1862, *Sutton Hayes 706* (BM), shrub 4–12 ft. high, fl. rosy; Cana, April 15, 1908, *R. S. Williams 719* (NY, US), 3 ft. high, fls. pink, fruit blackish purple, in dense clusters.

22. Parathesis oblongifolia Lundell, Wrightia 3: 67. 1963.
Fig. 21 and Plate 11.

Shrub, branchlets rather stout, ferruginous-tomentose, the fine stellate hairs closely appressed, tardily glabrescent; leaves with slender marginate

Fig. 20. *Parathesis microcalyx* Donn. Sm. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *H. Pittier 7591* (US), by Vivien Frazier.

Fig. 21. *Parathesis oblongifolia* Lundell. 1, Flowering branch; × ½. 2, Leaf, upper surface; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, *M. Bourgeau 2450* (S), by Vivien Frazier.

Plate 11. *Parathesis oblongifolia* Lundell. Flowers subcorymbose-umbellate, the rachis not accrescent. Type, *M. Bourgeau 2450* (S).

petioles up to 2.5 cm. long; leaf blades oblong, narrowly oblong-elliptic or lanceolate, 8–35 cm. long, 3–7 cm. wide, apex and base acuminate, margin obscurely crenulate and repand, thin, membranaceous, drying brown and slightly paler beneath, at first sparingly pubescent above with stellate hairs mostly at base along midvein and sparsely lepidote, bizonal beneath, the ferruginous pubescence of fine sessile closely appressed stellate hairs, glabrescent, the costa elevated beneath, nearly plane above, the primary lateral veins very slender, obscurely reticulate; inflorescences terminal, tripinnately paniculate, pyramidal, 5–18 cm. long, finely tomentose with ferruginous closely appressed stellate hairs and densely papillose-puberulent; pedicels slender, 1–4 mm. long, densely papillose; flowers umbellate or subcorymbose-umbellate, up to 4 mm. long at anthesis, papillose-puberulent; sepals triangular, acute, usually less than 1 mm. long, punctate; petals linear-lanceolate, 3–4 mm. long, papillose-tomentulose apically and along margins, black-punctate in lines; stamens 2–2.7 mm. long; filaments thick, 1–1.4 mm. long; anthers erect, dorsifixed one-third above base, ovate-oblong, 1.8–2.2 mm. long, acutish, with small punctate area dorsally, the glands black; ovary pilose-tomentose apically, often not densely so; style about 4 mm. long, with a few hairs at base; ovules 4–7, oblong-elliptic, large, uniseriate, enclosed.

MEXICO.—Tabasco: without locality, *E. P. Johnson 123* (NY). Veracruz: June–Oct. 1840, *H. Galeotti 7108* (G, K); Papantla, June, 1841, *F. M. Liebmann s.n.* (MO); Mirador, 1841–43, *F. M. Liebmann 12* (UC); Papantla, June, 1841, *F. M. Liebmann 13* (US); Papantla, Oct. 1842, *F. M. Liebmann 13* (C, NY, US); Orizaba, 1853, *Fred Müller 1382* (NY); Rio Huatusca, May 17, 1857, *Charles Mohr 131* (US); Orizaba region, May 28, 1865–1866, *M. Bourgeau 2450* (S, type; GH, K, LL, US, isotypes); Valley of Cordoba, Dec. 12, 1865–1866, *M. Bourgeau 7531* (GH, K); Zacuapan, Santa Ana, May, 1906, *C. A. Purpus s.n.* (UC); Zacuapan, banks of streams, moist localities, 1922, 1926, 1927, 1930, *C. A. Purpus 10716* (A, C, G, LL, MICH, S, UC, US); Cordoba, Aug. 1936, *Eizi Matuda 2270* (MICH); Ixtaczotitlan, 10 km. southeast of Orizaba, on lower slopes of El Cerro de Tuxpango, May 29, 1944, *Jose Vera Santos 2972* (LL, MICH), shrub 3 m. tall, fl. perianth red-purple, "*capulincillo.*" Indefinite: without locality, *C. J. W. Schiede s.n.* (P).

Of the mainland species, *P. oblongifolia* appears to be nearest *P. crenulata* (Vent.) Hook.f. From the West Indian plant, it may be separated at once by its very thin, often large, obscurely reticulate leaves which are widest at or below the middle. In *P. crenulata*, the leaves are oblanceolate and always widest above the middle, and the ovary is very sparsely pubescent apically, often glabrescent. Furthermore, the anthers, usually smaller and less punctate dorsally, the sepals rarely exceeding 1 mm. in length, the shorter pedicels, and the petals mostly 3–4 mm. long, are other differences which set apart the Mexican species.

23. Parathesis elliptica Lundell, Wrightia 3:63. 1963. Fig. 22 and Plate 12.

Shrubby, branchlets rather stout, blackish-brown, the indument minute, closely appressed and stellate-lepidote, glabrescent early; leaves with slender marginate petioles 8–15 mm. long; leaf blades elliptic, 7.5–15 cm. long, 3–6.5 cm. wide, apex subabruptly acuminate or acuminate, base acutish and decurrent, inconspicuously crenulate-serrulate, slightly rugulose, membranaceous-chartaceous, ferruginous-tomentose on undersurface at first with appressed stellate hairs, glabrescent early, probably bizonal but inconspicuously, the midvein

Fig. 22. *Parathesis elliptica* Lundell. 1, Flowering branch, showing both terminal and axillary inflorescences; × ½. 2, Leaf, undersurface; × ½. 3, Calyx; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, *Mateo Botteri 910* (F), by Vivien Frazier.

Plate 12. *Parathesis elliptica* Lundell. Flowers at length racemose-corymbose in large terminal inflorescences. From type locality, *P. Toro s.n.* (MEXU).

elevated beneath, slightly impressed above, the primary lateral veins slender, impressed above; inflorescences terminal, laxly and broadly pyramidal, tripinnately paniculate, exceeding the leaves, up to 20 cm. long and equally as wide at base, the indument sparse, minute, closely appressed, stellate-lepidote; pedicels slender, up to 8 mm. long, papillose-puberulent; flowers subracemose-corymbose, minutely tomentose, the buds ovoid, up to 4.5 mm. long at anthesis; sepals triangular, 1–1.2 mm. long, acute, punctate; petals narrowly lanceolate, up to 5 mm. long, thinly papillose-tomentulose within except at base, orange- and black-punctate in lines; stamens about 2.8 mm. long; filaments rather slender, up to 1.5 mm. long; anthers erect, lanceolate, 1.8-2 mm. long, narrowed to the acutish apex, dorsifixed, the dorsal punctate area small and triangular, consisting of a few minute black glands; ovary finely and minutely tomentose, tapering into style; style about 3 mm. long, tomentose below, pubescent to above middle; ovules 6, uniseriate, enclosed.

MEXICO.—Veracruz: Orizaba, April, 1855, *Mateo Botteri 910* (F, type; BM, G, GH, K, isotypes); Orizaba, Mar. 1891, *P. Toro s.n.* (MEXU).

P. elliptica is unique in several features, notably in having a pubescent style tomentose basally, petals thinly papillose-tomentose over entire surface within, and anthers black-punctate dorsally with only a few small glands. Its large spreading inflorescences and elliptic leaves are also distinguishing features.

In *P. elliptica* axillary inflorescences occasionally are present, sometimes on the same branch, as exemplified by the type of the species at Chicago. Its affinity appears to be with *P. melanosticta* (Schlecht.) Hemsl. which has strictly axillary inflorescences.

24. Parathesis brevipes Lundell, Wrightia 3: 62. 1963. Fig. 23 and Plate 13.

Arborescent shrub, branchlets rather stout, minutely ferruginous-tomentose at first with closely appressed stellate-lepidote indument; leaves with marginate petioles 1–2 cm. long; leaf blades oblanceolate, oblanceolate-elliptic or elliptic-oblong, 12-27 cm. long, 4-8.5 cm. wide, apex subabruptly acuminate, base acuminate and decurrent, crenulate to subentire, often repand, pellucid-punctate, membranaceous, drying brown and slightly paler beneath, bizonal, obscurely so early, the pubescence of lower surface of blade of minute closely appressed stellate hairs, glabrescent at maturity, the midvein elevated and conspicuous beneath, nearly plane above, primary lateral veins slender, reticulation inconspicuous; inflorescences terminal, narrowly pyramidal, tripinnately paniculate, 7.5-27 cm. long, minutely tomentose with appressed stellate hairs; pedicels short, usually 2.5–4 mm. long, papillose-puberulent; flowers corymbose-racemose, the corymbs comparatively few-flowered, the rachis elongating as flowering progresses, the rachis of racemes at length up to 1.5 cm. long; flowers at anthesis up to 4.5 mm. long, finely ferruginous-tomentose, the perianth pellucid-punctate and black-punctate or orange-punctate; sepals ovate-triangular, 1–1.4 mm. long, acuminate; petals linear-lanceolate, up to 4.5 mm. long, orange- and black-punctate in lines, short papillose-tomentose on inner surface along margins and apically; stamens about 2.5 mm. long; filaments about 1.2 mm. long; anthers erect, ovate, about 2 mm. long, dorsifixed about two-fifths above base, orange-punctate dorsally but usually with black glands present; ovary ovoid, minutely stellate-tomentose above middle, the apical hairs stiff and erect;

Fig. 23. *Parathesis brevipes* Lundell. 1, Flowering branch, showing bizonal pubescence on undersurface of leaf, and young fruits at base of corymbs; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *C. L. Lundell & Amelia A. Lundell 12419* (LL), by Vivien Frazier.

Plate 13. *Parathesis brevipes* Lundell. Apical section of inflorescence in late flowering stage. Type, *C. L. Lundell & Amelia A. Lundell 12419* (LL).

style about 4 mm. long; ovules 5–7, rarely 4 or 8, uniseriate, enclosed; fruits depressed globose, drying up to 1 cm. in diam.

MEXICO. CHIAPAS: along road between Teneapa and Yajalon, alt. 3000–5000 ft., Oct. 13, 1895, *E. W. Nelson 3283* (GH, US); Municipio de Ocosingo, limestone area, near Laguna Ocotal Grande, ca. 25–30 km. Southeast of Monte (Cerro) Libano, in tropical evergreen forest, elev. ca. 950 m., July 26, 1954, *Robert L. Dressler 1508* (GH). GUERRERO: edge of stream, 5½ miles S.E. Colotlipa, alt. 3100 ft., June 26, 1953, *V. M. Hicks & Chester M. Rowell, Jr. 3576* (MICH), bush, 5 ft. high, flowers red, anthers yellow, fruit purple. HIDALGO: south of Tamazunchale, along streams, June 17, 1935, *Ora M. Clark 6879* (MO, NY), large shrub; Chapulhuacan, Nov. 27, 1937, *Leslie A. Kenoyer 979* (F), 8–28–38, *s.n.* (MICH), tree; in ravine on mountainside, km. 340 of highway, between Chapulhuacan and Tamazunchale, Aug. 20, 1943, *C. L. Lundell & Amelia A. Lundell 12419* (LL, type & isotype; MICH, US, isotypes), slender arborescent shrub, 4 ft. high, inflorescences and flowers rose-red, fruits depressed-globose, black. MICHOACAN: Hacienda Coahuayula, Feb. 1901, *G. M. Emrick 30* (F). OAXACA: without locality, 1845, *F. M. Liebmann s.n.* (P); Casolapan, Nov. 4, 1913, *F. Salazar s.n.* (US). PUEBLA: Carlos Pacheco, Mar. 11, 1913, *F. Salazar s.n.* (MEXU, US); Mesa San Diego-Huauchiango, *Helia Bravo H. s.n.* (MEXU). SAN LUIS POTOSI: river banks, etc., Tamasopo, June 11, 1890, *C. G. Pringle 3101* (A, BM, F, G, GH, LL, MEXU, MO, NY, P, S, US), 5 to 8 feet; vicinity of Rascon, July 19–22, 1905, *Edward Palmer 666* (F, GH, MO, UC, US); Micos Falls, alt. 1400 ft., July 12, 1933, *Robert A. Vines 338* (US); Tamazunchale, in wet second growth on hillside, July, 1937, *C. L. Lundell & Amelia A. Lundell 7136* (A, LL, MICH, NY), shrub, 1.5 m., inflorescences and flowers red, fruits dark blue; Tamazunchale, Poistapa, July 11, 1937, *Mary Taylor Edwards 523* (F, MO, TEX), Aug. 24, 1937, *631* (F); Tamazunchale, Nov. 26, 1937, *Leslie A. Kenoyer 970* (F, MO); 5 miles north of Tamazunchale, July 3, 1940, *C. L. Hitchcock & L. R. Stanford 6948* (GH, MICH, UC), shrub 4 ft. tall; Tamazunchale, Aug. 16, 1940, *Leslie A. Kenoyer C193* (NY); near Tamazunchale, along highway, elev. 1000 ft., July 5, 1941, *Mr. & Mrs. Wm. C. Leavenworth 897* (F, MO), shrub, 10 ft. high; near Axtla, elev. 200 ft., June 23, 1942, *J. N. Weaver 662* (GH, US); Palitla, in forest, July 13, 1943, *C. L. Lundell 12227* (LL, MICH, NY, US), arborescent, 1 in. diam., 5 ft. high, pedicels and flowers pink; Tamazunchale, alt. 360 ft., July 18, 1945, *Geo. L. Fisher 45182* (S). TAMAULIPAS: along the moist sandy banks of Rio Sabinas, under *Taxodium*, 55 mi. south Ciudad Victoria, alt. 115 m., July 31, 1948, *F. G. Meyer & D. J. Rogers 2854* (G, MO), shrub to 8 ft. tall, inflorescence and fruit light pink. VERACRUZ: Mirador, 1838, *J. J. Linden 397* (K); Zacuapan and vicinity, moist shady woods, Sept. 1906, *C. A. Purpus 1953* (F, GH, MO, NY, UC, US); Chontla, Feb. 1910, *R. Cardenas 324* (F, US); on the lower slopes of El Cerro de Ejecatepetl, 12–14 km. northwest of Campo Experimental de Hule, El Palmar, elev. 1000–2390 ft., June 7, 1944, *Jose Vera Santos 3016* (LL, MICH), shrub 2 m. tall, flowers light red-purple to pink. INDEFINITE: 1865–1866, *M. Hahn s.n.* (P).

P. brevipes is perhaps the same as *P. Donnell-Smithii* Mez. The Mexican material is quite variable, and *P. brevipes* needs to be evaluated in the field. *P. Donnell-Smithii* is one of the enigmas of the genus, the type not being representative of the broader populations.

25. PARATHESIS DONNELL-SMITHII Mez, Pflanzenreich IV. 236: 176. 1902. Figs. 24, 25 and Plates 14, 15.

Parathesis platyphylla Lundell, Wrightia 1: 160. 1946.

Arborescent shrub, branchlets stout, turgid and brittle when fresh, drying subangular, very minutely appressed pubescent with stellate tawny hairs, glabrescent and blackish-gray early; leaves with marginate petioles up to 2.5 cm. long; leaf blades oblanceolate or elliptic, 10–25 cm. long, 3.5–9 cm. wide, apex subabruptly long acuminate or acuminate, base acuminate, membranaceous

Fig. 24. *Parathesis Donnell-Smithii* Mez. 1, Corymbose-racemose inflorescence in late flowering stage, showing accrescent rachis and young fruits at base; × ½. 2, Leaf, showing undulate-dentate margin; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from isotype, *H. von Tuerckheim 7919* (A), by Vivien Frazier.

Fig. 25. *Parathesis Donnell-Smithii* Mez. 1, Flowering branch with flowers corymbose; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type of *P. platyphylla*, *Percy H. Gentle 2615* (LL), by Vivien Frazier.

Plate 14. *Parathesis Donnell-Smithii* Mez. Section of inflorescence in late flowering stage. Isotype, *H. von Tuerckheim 7919* (MO).

Plate 15. *Parathesis Donnell-Smithii* Mez. Flowers corymbose or subcorymbose in bud. Type of *P. platyphylla, Percy H. Gentle 2615* (LL).

or chartaceous, bullate, obscurely crenulate and sometimes coarsely undulate-dentate, appearing glabrous but at first with very fine closely appressed stellate hairs on undersurface, completely glabrous very early, costa elevated beneath, plane or slightly impressed above, the primary lateral veins slender, plane or slightly impressed above, inconspicuously reticulate; inflorescences fleshy and brittle, terminal, large, many-flowered, tripinnately paniculate, oblongish or pyramidal, usually exceeding the leaves, up to 30 cm. long, rather sparsely but minutely appressed pubescent with minute stellate indument; floriferous rachis corymbose-racemose, accrescent, the racemes at length up to 3.5 cm. long; pedicels pink, up to 8 mm. long; flowers 4–6 mm. long at anthesis, the smaller flowers terminal, minutely ferruginous-tomentose; sepals 0.8–1.7 mm. long, narrowly triangular, acuminate, black-punctate; petals pink, linear-lanceolate, 4–6 mm. long, short papillose-tomentose within except at base, black-punctate in lines; stamens 2–3.8 mm. long; filaments stout, 1–1.5 mm. long; anthers erect, lanceolate-oblong, 1.5–2.5 mm. long, acutish, dorsifixed one-third above base, with conspicuous acutely triangular elevated black-punctate dorsal area, the glands large; ovary ovoid, finely tomentose apically; style 3–4.5 mm. long, pubescent at base; placenta minute; ovules 4–6, uniseriate, enclosed; fruits depressed-globose, costate, punctate with small glands, acid at maturity, red-black, drying 8 mm. in diam.

MEXICO.—Chiapas: Rio Salinas above mouth of Rio Pasion, in forest along river, Feb. 8, 1964, *C. L. Lundell 17816* (LL), arborescent shrub, 8 ft. high, the stems and inflorescences fleshy, turgid, brittle, the leaves bullate, the pedicels and petals pink, the fruits depressed-globose, dark red, acid; same locality, *17817* (LL), small tree, 2 in. diam., 12 ft. high, the fruits red-black; same locality, in *Bactris* thicket on riverbank, *17822* (LL), small tree, 4 in. diam., 20 ft. high; Municipio of Tenejapa, junction of the Tanate River and river from Yochib, at Tsahal Kesh in Barrio of Habenal, elev. 2965 ft., July 13, 1964, *D. E. Breedlove 6349* (F), fls. red, shrub 4 ft. Oaxaca: District of Tuxtepec, Chiltepec and vicinity, alt. about 20 m., July, 1940–Feb. 1941, *G. Martinez-Calderon 16* (A, LL, UC, US).

GUATEMALA.—Alta Verapaz: Cubilquitz, alt. 350 m., Feb. 1901, *H. von Tuerckheim 7919* (US, type; A, GH, MO, NY, US, isotypes); Cubilquitz, alt. 350 m., Feb. 1903, *H. von Tuerckheim 8430* (F, US); Cubilquitz, alt. 350 m., Aug. 1904, *H. von Tuerckheim II 275* (LL, S); near Coban, damp pine forest, alt. 1260–1440 m.; Mar. 26–Apr. 15, 1939, *Paul C. Standley 69364* (F), shrub 8 ft., fruit black, edible, "*guaketun*"; Finca Socuyo, northeast of Carcha, damp forest, alt. about 1350 m., Apr. 2, 1939, *Paul C. Standley 70239* (F), shrub or small tree, fruit black; along Quiche highway about 12 km. west of San Cristobal, dense mixed forest, alt. about 1100 m., *Paul C. Standley 89725* (F), shrub 2 m. tall, fruit bright red; along Rio Polochic, above Tamahu, alt. about 1200 m., Apr. 10, 1941, *Paul C. Standley 91791* (F), shrub 2 m. tall, common; lowland forest in valley, "pantano," west of Cubilgüitz, alt. 250–300 m., Feb. 28, 1942, *Julian A. Steyermark 44334* (F, US), shrub 15 ft. tall, pedicels rose-red. Chiquimula: Montaña Castilla, vicinity of Montaña Cebollas, along Rio Lucia Saso, 3 miles southeast of Quezaltepeque, rocky banks of stream, alt. 1200–1500 m., Nov. 6, 1939, *Julian A. Steyermark 31236* (F), shrub 5 ft. tall, leaves subcoriaceous, pale green both sides, the nerves sulcate, forming deep impressions, inflorescence drooping, fruit blue-black, 8 mm. in diam. Huehuetenango: around Ixcan at "Patcushin," Sierra de los Cuchumatanes, alt. 500 m., July 22, 1942, *Julian A. Steyermark 49193* (F), shrub 20 ft. tall, fruit edible, "*palo de uva.*" Quiche: Finca Chaila, "Zona Reyna," alt. 1200 ft., Nov. 30, 1934, *Alexander F. Skutch 1810* (A, BM, F, G, NY, US), shrub, 9 ft. high, fls. pink, berries glossy black. Suchitepequez: along Rio Madre Vieja, above Patulul, damp forest, alt. 450 m., Jan. 6, 1939, *Paul C. Standley 62226* (F), shrub or small tree, fruit black, sweet but not very agreeable.

BRITISH HONDURAS.—El Cayo: Vaca, at edge of creek, Apr. 4, 1938, *Percy H. Gentle*

2443 (A, F, LL, MICH, NY), treelet, 1½ in. diam., 10 ft. high; Vaca, at base of hill, May 13, 1938, *Percy H. Gentle 2615* (LL, type of *P. platyphylla*; A, F, MICH, NY, isotypes), tree, 3 in. diam., fls. red.

HONDURAS.—INDEFINITE: near Lake Yojoa, July 29–Aug. 10, 1951, *R. Howard, W. Briggs, P. Kamb, I. Lane, & R. Ritland 665* (A), riverbank shrub, 8 ft., peduncles and pedicels lavender, flowers reddish, fruit clear, translucent.

Of the species with flowers corymbose-racemose in late flowering stages, *P. Donnell-Smithii* represents the extreme of this development. As flowering progresses, young fruits form at the base of the accrescent rachis. Noteworthy also is the reduction in flower size as flowering progresses, the first flowers are largest, the last reduced in size. The open large inflorescences and slender pedicels contrast markedly with the closely related *P. brevipes* Lundell.

P. platyphylla was described from early flowering material in which the rachis of the corymb has not elongated. The type is more pubescent than the type of *P. Donnell-Smithii*. It is perhaps a distinct taxon, but needs to be studied in the field.

26. PARATHESIS EMARGINATA Lundell, Wrightia 2: 64. 1963. Fig. 26.

Tree, up to 16 m. high, branchlets rather stout, appressed-tomentose with fine brownish stellate hairs, glabrescent; leaves with petioles 1–2 cm. long, the petioles finely tomentose beneath, sparsely papillose above at first; leaf blades elliptic or obovate-elliptic, 10.5–19 cm. long, 4–7 cm. wide, apex abruptly short acuminate, the acumen acute, narrowed to a cuneate decurrent base, the margin repand and obscurely crenulate, membranaceous, black-punctate, slightly paler beneath, drying dark brown, bizonal, sparsely papillose above at first, pubescent on undersurface with fine stellate appressed ferruginous hairs, the marginal zone glabrescent early, the entire undersurface glabrescent with age, costa elevated beneath, the lateral veins slender but conspicuous on undersurface; inflorescences terminal, tripinnately paniculate, 9–15 cm. long, papillose-puberulent and sparingly tomentose with small sessile stellate hairs; flowers subcorymbose; pedicels 2.5–5 mm. long, densely papillose; flower buds before anthesis ovoid, about 5 mm. long, densely papillose-puberulent; sepals ovate-triangular, about 1 mm. long, acute or short acuminate, black-punctate; petals linear-lanceolate, up to 5.5 mm. long, united at base, black-punctate in lines, papillose-tomentose within along margins and above middle; stamens about 3.8 mm. long; filaments stout, 1.8–2 mm. long; anthers erect, oblong-lanceolate, 1.8–2.2 mm. long, dorsifixed, with a triangular black-punctate area above attachment, and with glands extending into lobes, apex rounded and shallowly emarginate, sometimes with a tuft of hairs ventrally at apex, grooved dorsally; ovary tomentose above with rather stiff hairs; style with hairs almost to middle, 4 mm. long; placenta obovoid, depressed; ovules 6–8, minute, subglobose, erect, uniseriate, enclosed.

COLOMBIA.—MAGDALENA: Santa Marta, Cacagualeto, common in deep wooded valleys, especially near streams, alt. ca. 500 m., May 15, 1898–1901, *Herbert H. Smith 444* (F, type; BM, LL, MICH, NY, US, isotypes), flowers in May and June.

The type collection, *Smith 444*, is a mixture of *P. emarginata* and *P. reticulata* var. *sinuata* Lundell.

The emarginate anthers grooved dorsally at apex and often bearing a tuft of

Fig. 26. *Parathesis emarginata* Lundell. 1, Flowering branch; × ½. 2, Leaf, undersurface showing bizonal pubescence; × ½. 3, Calyx, spread out; × 5. 4, Flower with emarginate anthers; × 5. 5, Pistil; × 5. Illustrated from type, *Herbert H. Smith 444* (F), by Vivien Frazier.

hairs ventrally, the dense papillose-puberulent indument of the flowers, the small sepals scarcely 1 mm. long, mostly broadly elliptic leaves, tomentose ovary, and minute ovules are distinctive features of *P. emarginata*.

27. Parathesis guatemalensis Lundell, Wrightia 3: 65. 1963. Fig. 27.

Shrub, branchlets dull red, rather stout, at first densely ferruginous-tomentose with fine appressed hairs, glabrescent at length and appearing lepidote; leaves with marginate petioles up to 1.3 cm. long; leaf blades lanceolate, lanceolate-elliptic or oblanceolate, 9–16 cm. long, 3–7.5 cm. wide, apex subabruptly acuminate, base cuneate and decurrent, firm and subcoriaceous, repand and denticulate or subentire, midvein prominent beneath, the primary lateral veins conspicuous on undersurface, slightly impressed above, upper surface somewhat rugulose, and at first stellate pubescent, glabrescent very early except along costa, bizonal, the ferruginous pubescence of fine short-rayed appressed stellate hairs, glabrescent, the marginal zone early; inflorescences terminal, tripinnately paniculate, up to 12.5 cm. long, narrow, only slightly wider at base, finely tomentose at first with ferruginous stellate hairs and papillose-puberulent, glabrescent; pedicels 4–7 mm. long; flowers minutely ferruginous-tomentose, subcorymbose, up to 5 mm. long at anthesis; sepals lanceolate, 1–1.5 mm. long, acuminate, black-punctate; petals linear-lanceolate, 3.5–5 mm. long, black-punctate with lines, papillose-tomentose within along edges and above middle; stamens 2.7–4 mm. long; filaments 1.4–2.2 mm. long; anthers erect, lanceolate, 2–3 mm. long, apiculate and usually bearing a few reddish hairs apically, dorsifixed one-third or two-fifths above base, with conspicuous acutely triangular black-punctate area dorsally, the glands extending into lobes; ovary ovoid, attenuate apically into the style, conspicuously hirtellous-tomentose; style slender, about 4 mm. long, with a few hairs basally; ovules 5–7, uniseriate, enclosed; fruits subglobose, black, drying up to 8 mm. in diam.

GUATEMALA.—Alta Verapaz: Chicoyonito, alt. 4300 pp., Apr. 1889, *John Donnell Smith 1537* (GH, US); Coban, alt. 1350 m., June, 1906, *H. von Tuerckheim II 1202* (BM, C, G, LL, S), bl. rot; Coban, alt. 1350 m., Aug. 1906, *H. von Tuerckheim II 1202* (F, type; GH, LL, MO, NY, isotypes); near Coban, wet thicket, alt. 1260–1440 m., Mar. 26–Apr. 15, 1939, *Paul C. Standley 69418* (F, LL), shrub 10 ft., inflorescence dull red; along Rio Carcha, between Coban and San Pedro Carcha, wet wooded ravine, alt. about 1360 m., Mar. 26, 27, 1941. *Paul C. Standley 90082* (F), large shrub; hills between Coban and Tres Cruces, pine-oak forest, alt. about 1350 m., Mar. 28, 1941, *Paul C. Standley 90261* (F), shrub 70 cm. tall, fruit black; along Rio Polochic, above Tamahu, damp rocky thicket, alt. about 1200 m., Apr. 10, 1941, *Paul C. Standley 91811* (F), shrub 2 m. tall; Chamal, bordering Rio Coban, matorrales y bosque mixto, alt. 1200 m., May 13, 1963, *Antonio Molina R. & Albertina R. Molina 12182* (F), fls. rosadas, arbusto 3 m.; Coban, ca. 4250 ft., July 13, 1964, *George R. Proctor 25110* (LL), shrub, 2 m., entire inflorescence red-purple. Guatemala: without locality, 1939, *Jose Ignacio Aguilar 130* (F). Suchitepequez: vicinity of Mazatenango, by bank of stream, alt. about 350 m., Feb. 20, 1905, *William R. Maxon & Robert Hay 3499* (NY), 15 ft. high. Zacapa: oak-pine woods along upper reaches of Rio Sitio Nuevo, between Santa Rosalia and first waterfall, at base of waterfall, alt. 1200–1500 m., Jan. 9, 1942, *Julian A. Steyermark 42210* (F, NY), shrub 15 ft. tall, leaves subcoriaceous, dull green above, paler dull green beneath, fruit black, shining.

HONDURAS.—Cortes: swamp near Agua Azul Ranch, Lake Yojoa, alt. 630 m., Apr. 14, 1951, *Louis O. Williams & Antonio Molina R. 17947* (F), shrub, 2–4 m.; in second growth, Lake Yojoa, alt. 630 m., Jan. 1, 1953, *Louis O. Williams & Terua P. Williams 18801* (F, US), fls. pink, shrub 2 m. Comayagua: side of ravine near El Achote, hills above the plains of Sigu-

Fig. 27. *Parathesis guatemalensis* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen, with anther barbate at apex; × 5. 4, Pistil; × 5. Illustrated from type, *H. von Tuerckheim II 1202* (F), by Vivien Frazier.

atepeque, alt. 1350 m., June–Aug. 1936, *T. G. Yuncker, R. F. Dawson & H. R. Youse 5890* (F, G, GH, MICH, MO, S, US), small tree about 15 ft. tall, 3 in. diam., flowers, pedicels, etc. flesh color, leaves fleshy; vicinity of Siguatepeque, thicket along stream, about 1050 m., Mar. 25–Apr. 5, 1947, *Paul C. Standley & Jaime Chacon P. 6691* (F), shrub 2–3 m.; in pine forest above La Mision, alt. 915 m., Apr. 8, 1947, *Louis O. Williams & Antonio Molina R. 12340* (F), shrub 3–4 m.; matorrales humedos de Rio Frio, cerca de La Libertad, alt. 300 m., May 19, 1956, *Antonio Molina R. 7003* (F), arbusto 2 m. MORAZAN: in oak-pine woods above Hoya Grande, alt. 1500 m., May 11, 1947, *Louis O. Williams & Antonio Molina R. 12666* (F, GH), fls. pink, shrub 2 m.; region of El Jicarito, above El Zamorano, moist rocky quebrada, alt. 900–1000 m., Aug. 13, 1949, *Paul C. Standley 21073* (F), shrub 2 m., corolla pink; frequente a orillas de Quebrada Honda, entre Las Tablas y Lopaterique, alt. 1400 m., Mar. 31, 1957, *Antonio Molina R. 7842* (F), fls. rosadas, arbusto 2 m. SANTA BARBARA: matorrales humedos al norte de Santa Barbara, region La Cuesta, alt. 500 m., Dec. 13, 1950, *Antonio Molina R. 3761* (F), arbusto 4 m., comun.

The anthers have apical hairs, as in *P. serrulata* (Sw.) Mez, but *P. guatemalensis* is not to be confused with that species of Hispaniola. From related species, *P. guatemalensis* differs in such significant characteristics as having fewer ovules, finer denser stellate pubescence on undersurface of young leaves, anthers with acutely triangular black-punctate area dorsally, and ridged ovary hirtellous-tomentose on the ridges.

28. PARATHESIS OXYPHYLLA Lundell, Wrightia 2: 68. 1963. Fig. 28 and Plate 16.

Branchlets rather stout, minutely pubescent at first with fine sessile stellate hairs, essentially stellate-lepidote; leaves subsessile or with marginate petioles up to 1.5 cm. long; leaf blades oblanceolate or lanceolate, 8–14 cm. long, 3–5.5 cm. wide, apex acuminate, base acute and decurrent on petiole, conspicuously crenulate-serrulate, sparsely papillose at base above along midvein, the petiole and blade finely stellate pubescent beneath with appressed hairs, bizonal, glabrescent, the marginal zone glabrescent first, chartaceous, the costa and primary veins elevated beneath, the veins slightly impressed above; inflorescences terminal, up to 17 cm. long, narrowly pyramidal, tripinnately paniculate, the branches rather remote, short and stout, minutely stellate-lepidote; flowers subcorymbose, up to 5.5 mm. long at anthesis, minutely tomentose at first, papillose-puberulent; pedicels 3–5 mm. long; sepals narrowly lanceolate, 1.5–2 mm. long, acuminate, black-punctate; petals narrowly lanceolate, united at base, about 5.5 mm. long, black-punctate in lines, papillose-tomentose within apically and along edges; stamens 3–3.5 mm. long; filaments up to 1.5 mm. long; anthers erect, lanceolate, up to 2.5 mm. long, apiculate, dorsifixed one-third above base, with black-punctate triangular area above attachment, with glands extending down into lobes; ovary ovoid, minutely and finely tomentose to middle; style up to 4.5 mm. long; placenta acicular apically; ovules 6 or 7, erect, uniseriate, enclosed.

MEXICO.—OAXACA, Chinantla, May, 184–, *H. Galeotti 1720* (G, NY, US); without locality, *C. Juergensen 203* (K, type; G, isotype).

The species is notable for the remote short rather stout branches of the inflorescences and finely tomentose ovary.

29. PARATHESIS CUBANA (A.DC.) Molinet & Gomez Maza, Diec. Bot. 11. 1889; Pflanzenreich IV. 236: 174. 1902. Fig. 29 and Plate 17.

Fig. 28. *Parathesis oxyphylla* Lundell. 1, Flowering branch; × ½. 2, Pedicel, calyx and pistil; × 5. 3, Petal and stamen; × 5. Illustrated from type, *C. Juergensen 203* (K), by Vivien Frazier.

Plate 16. *Parathesis oxyphylla* Lundell. Flowering branch. Type, *C. Juergensen 203* (K).

Fig. 29. *Parathesis cubana* (A.DC.) Molinet & Gomez Maza. 1, Flowering branch with typical terminal inflorescence; × ½. 2, Leaf; × ½. 3, Calyx, spread out; × 5. 4, Flower, with petals papillose-tomentose over entire inner surface; × 5. 5, Pistil, pubescent as illustrated or glabrous; × 5. 6, Fruits, enlarged. Flowering branch and floral parts illustrated from *C. L. Lundell 15979* (LL), by Vivien Frazier.

Plate 17. *Parathesis cubana* (A.DC.) Molinet & Gomez Maza. Flowering branch. Type of *P. corymbosa* Hemsl., *C. Juergensen 611* (K).

Ardisia cubana A.DC., Trans. Linn. Soc. 17: 124. 1834; Prodr. 8: 120. 1844.
Parathesis corymbosa Hemsl., Biol. Centr. Amer. Bot. 2: 291. 1882.
Tinus cubana (A.DC.) O. Ktze, Rev. Gen. 2: 974. 1891.
Parathesis obovata Standl., Field Mus. Bot. 4: 250. 1929.

Shrub or small tree up to 5 m. high, branchlets slender, at first ferruginous-tomentulose with fine sessile appressed stellate hairs; leaves with slender petioles 0.5–2.2 cm. long; leaf blades elliptic, obovate-elliptic or obovate, 3.5–16 cm. long, 2–7 cm. wide, apex obtuse to acutish, base acute, chartaceous or sometimes thinner, slightly paler beneath, at first pubescent on undersurface with fine appressed sessile stellate ferruginous hairs, glabrescent early, entire, the midvein elevated beneath, the primary lateral veins slender; inflorescences usually terminal and leafy below, rarely terminal and axillary on some branches, pyramidal, paniculate, 1- or 2-branched, up to 20 cm. long, ferruginous-tomentulose with fine sessile stellate hairs; pedicels slender, 2–7, sometimes 10 mm. long; flowers corymbose, 5-parted or sometimes 6-parted, up to 7 mm. long at anthesis, the corolla pinkish, densely and minutely papillose-tomentulose on outer surface; sepals 0.7–1 mm. long, acutish, pellucid-punctate with orange glands; petals narrow, lanceolate-linear, 5–7 mm. long, densely papillose-tomentose over entire inner surface, orange-red punctate in lines; stamens 3–5 mm. long; filaments thick, 1–2 mm. long, orange-red punctate in lines; anthers erect, lanceolate-linear, 2–3.4 mm. long, dorsifixed at base, the lobes small, sometimes vestigial, punctate dorsally with orange-red glands which sometimes dry blackish, dehiscent with apical pores; ovary ovoid, usually glabrous, sometimes short villous apically; style glabrous, or short villous at base, 3.5–5.5 mm. long; placenta depressed-ovoid, apiculate; ovules small, numerous, 12–16, partially biseriate, tardily exposed apically; fruits depressed-globose, drying up to 1 cm. in diam.

CUBA.—Pinar del Rio: vicinity of Herradura, Aug. 26–30, 1910, *N. L. Britton, E. G. Britton, F. S. Earle & O. S. Gager 6311* (NY), *6358* (NY), *6648* (NY); vicinity of Pinar del Rio, riverbank, Mar. 8–15, 1911, *E. G. Britton 10033* (NY), buds pink; southern foot of Cajalbana, Apr. 6, 1915, *Bros. Leon & Charles 4954* (NY); vicinity of San Diego, Apr. 1915, *Bro. Charles 4999* (NY); valley of "Las Yeguas" near S. Diego de los Baños, Aug. 18, 1914, *Bros. Leon & Hioram 4369* (NY); Viñales, rivulet, pinelands, Dec. 11, 1930, *Bro. Leon & E. P. Killip 14704* (NY); without locality, June, 1911, *Eugenio Cuesta s.n.* (NY); source of Rio Taco-Taco, Sierra de los Organos, alt. 400–500 m., Nov. 18, 1941, *C. V. Morton 4355* (US), small tree, flowers pink, fruits dark red; Herradura, Mar. 16, 1906, *A. S. Hitchcock s.n.* (F); El Sabalo, Finca Sabanalamar, near sea level, open woods, Dec. 22, 1937, *E. P. Killip 32242* (US), tree, 4 m. high, fls. pink; Pinar de Cajalbana, Mar. 10, 1930, *E. L. Ekman 10466* (A, G, NY), frutex, flor. rubri; Parte Oeste de Artemisa, Sept. 14, 1904, *F. S. Earle & P. Wilson 1534* (NY); Herradura, Sept. 30, 1904, *Bryant O. Baker 2150* (NY), *2158* (NY); without locality, Nov. 15, 1904, *Bryant O. Baker & O'Donovan 4073* (NY); Arroyo Galiano, June 20, 1905, *O'Donovan 5205* (NY); Luis Lago, July 7, 1905, *O'Donovan 5312* (NY, US); Consolacion del Sur, Nov. 1904, *H. A. Van Hermann s.n.* (NY); near Herradura, in wet savanna, Nov. 21, 1904, *H. A. Van Hermann 260* (F, NY), *269* (F, NY) erect 2–4 ft. bushy, fls. pink; near Herradura, rather common, Jan. 23, 1905, *H. A. Van Hermann 593* (BM, F, LL, NY), anthers yellow; same locality, Aug. 24, 1905, *H. A. Van Hermann 710* (NY); same locality, Sept. 7, 1905, *H. A. Van Hermann 808* (NY); Herradura, thicket near stream, Aug. 16, 1907, *F. S. Earle 735* (F, NY, US); Zambumbia Hill, Rosario Range, July 7–12, 1941, *Bro. Alain 9* (NY); banks of La Plata Rivulet, alt. 500 m., Jan. 1949, *Bro. Alain 699* (NY); Cerro de Cabras, May 19, 1951, *Bro. Alain 1834* (NY); La Palma, west of Cajalbana Mt., serpentine barrens, Apr. 3, 1954, *Bro. Alain 3884* (NY); between Viñales and Pan de Azucar, serpentine barren,

Oct. 9, 1955, *Bro. Alain 4403* (US); dry plateau, Apr. 24, 1903, *J. A. Shafer 273* (NY), shrub, 1.5 m.; west of Guane, palm barrens, Nov. 21–22, 1911, *J. A. Shafer 10369* (F, LL, MO, NY, US), shrub 5–8 ft., corolla pink, fruit red to black; Sierra Mendoza, Dec. 25, 1911, *J. A. Shafer 11156* (NY, US), shrub 3 ft.; vicinity of Los Palacios, thicket, Jan. 8, 1912, *J. A. Shafer 11689* (MO, NY, US); Herradura to Paso Real, Jan. 11, 1912, *J. A. Shafer 11763* (MO, NY, US); San Juan de Zayas to San Gabriel, Jan. 17–18, 1912, *J. A. Shafer 11836* (NY, US); Arroyo del Sumidero, damp thicket, Aug. 7–9, 1912, *J. A. Shafer & Bro. Leon 13593* (NY, US), shrub 5 ft., fls. pink, fruit red. INDEFINITE: *Ramon de la Sagra s. n.* (G, P, isotypes); San Diego de Baños, Nov. 17, 1860–1864, *C. Wright 2910* (BM, G, GH, LL).

MEXICO.—CAMPECHE: Tuxpeña, Nov. 23, 1931, *C. L. Lundell 977* (F, GH, LL, MICH, MO, NY, UC, US); Champoton, in forest along river, July 7–15, 1932, *W. C. Steere 1785* (BM, F, MICH). OAXACA: Istmo de Tehuantepec, Estacion San Marcos, Jan. 21, 1907, *Cassiano Conzatti 1695* (US). TABASCO: La Palma, near Balancan, June 1–6, 1939, *Eizi Matuda 3265* (A, F, MICH, NY), fl. roseus. VERACRUZ: Tlacoxalpam, *H. Galeotti 1718* (G); region of San Andres Tuxtla, near Los Mangos, S.E. of Catemaco, *Brysonima* savanna, Aug. 19, 1953, *Robert L. Dressler & Quentin Jones 107* (BM, F, GH, MO, NY, UC, US), 2–3 m. tall, fls. pink. YUCATAN: 1840, *J. J. Linden s.n.* (G). INDEFINITE: Sierra San Pedro Nolasco, Talea, & c., 1843–4, *C. Juergensen 611* (K, type of *P. corymbosa*; BM, G, isotypes).

GUATEMALA.—ALTA VERAPAZ: between Sachaj and Sacacac, Cerro Chinaja, alt. 150–180 m., Mar. 20, 1942, *Julian A. Steyermark 45153A* (F, US); Sacoyon Farm, ca. 30 km. of Coban, in low forest on top of hill, May 29, 1964, *Elias Contreras 4852* (LL), small tree, 4 in. diam., 30 ft. high. IZABAL: Santa Cruz, on north side of Lago Izabal, alt. 50–60 m., Apr. 18, 1940, *Julian A. Steyermark 39666* (F), *39668* (F); Finca Murcielago, ca. 10 miles east of El Estor on Lake Izabal, Sept. 13, 1961, *Hugh Popenoe 48* (F). PETEN: Santa Cruz, Mar. 27–28, 1931, *H. H. Bartlett 12365* (F, MICH, UC, US), shrub; Uaxactun to San Clemente, Apr. 30, 1931, *H. H. Bartlett 12794* (MICH); La Libertad, San Francisco Savanna, on limestone mound in Chakantun, Apr. 4, 1933, *C. L. Lundell 2480* (F, MICH), a shrub; La Libertad, in marginal forest, Apr. 27, 1933, *C. L. Lundell 3057* (F, MICH, MO), a shrub or treelet, *"ixpanol"*; Lake Peten, aviation field along shore of lake, May 5, 1933, *C. L. Lundell 3112* (F, MICH, US), a shrub; La Libertad, June 3, 1933, *C. L. Lundell 3606* (MICH); Tikal National Park, Bajo del Hormiguero, in *tintal*, Feb. 13, 1959, *C. L. Lundell 15519* (LL), slender tree, 12 ft. high; Bajo de Santa Fe, in *tintal* on Aguada Terminos road, Mar.–June, 1959, *C. L. Lundell 15979* (LL), arborescent, 4 ft. high; Tikal, in secondary growth bordering airfield, June 5, 1959, *C. L. Lundell 16050* (LL), arborescent, 3 ft. high; Bajo del Hormiguero, in *tintal*, July 6, 1959, *C. L. Lundell 16227* (LL), arborescent, flowers pinkish; Machaquila, ca. km. 77 of road, in pineland, July 13, 1959, *C. L. Lundell 16414* (LL), shrub, 6 ft., corolla pinkish; Bajo de Santa Fe, in *chololal* bordering *pinal*, Mar. 8, 1960, *C. L. Lundell 16756* (LL), slender shrub, 6 ft. high, fruits globose; Bajo de Santa Fe, growing near Aguada Pucte, Jan. 11, 1962, *C. L. Lundell 17017* (LL), slender shrub, berries red; Bajo del Hormiguero, in *tintal*, bordering aguada, Jan. 19, 1962, *C. L. Lundell 17196* (G, LL), arborescent shrub, 2 in. diam., fruits reddish; La Libertad and vicinity, *Mercedes Aguilar H. 354* (F, MICH); Carmelita, in thicket bordering aviation field, June 22, 1942, *Frank E. Egler 42 190* (F, LL), shrub 2 m. high, petals pinkish-white inside, pink outside, fruit dark red; Tikal, in secondary growth bordering airfield, Oct. 6, 1959, *Elias Contreras 223* (G, LL), arborescent shrub; Bajo de Santa Fe, in *chololal* bordering *pinal*, Jan. 30, 1960, *Elias Contreras 538* (LL), 2 in. diam.; Bajo de Santa Fe, *pinal* trail, in *tintal* bordering aguada, Feb. 1, 1960, *Elias Contreras 575* (LL), small tree; Tikal National Park, Dos Aguadas trail, in *corozal*, Aug. 20, 1960, *Elias Contreras 1428* (LL); Dos Lagunas, in *tintal*, Nov. 25, 1960, *Elias Contreras 1649* (LL), 2 in. diam.; Bajo del Hormiguero, in *tintal*, Jan. 27, 1961, *Elias Contreras 1880* (LL); Dolores, Apr. 17, 1961, *Elias Contreras 2103* (LL), small tree; Dolores, in pineland, May 3, 1961, *Elias Contreras 2236* (LL), *2737* (LL), *2864* (LL), fruits reddish-black; Lacandon, in high forest, Feb. 5, 1962, *Elias Contreras 3321* (LL), shrub, 3 in. diam., 15 ft. high; Lacandon, in low forest, Feb. 23, 1962, *Elias Contreras 3451* (LL); Pucte, on Rio Pucte, below Sayaxche, in *tintal*, Mar. 6, 1964, *C. L. Lundell 18134* (LL), shrub, fruit reddish.

BRITISH HONDURAS.—Belize: Manatee River, Cornhouse Creek, Jan. 31, 1931, *H. H. Bartlett 11271* (F, MICH, MO), tree, fls. pink, berries red; Prospecto-Maskall road, in high ridge, Nov. 9, 1933, *Percy H. Gentle 874* (A, F, MICH, MO, NY, UC, US); Belize-Cayo Road, Colonel English Pine Ridge, open pine ridge, May 7, 1958, *Percy H. Gentle 9755* (BM, G, LL), small tree. Corozal: 1931–1932, *Percy H. Gentle 195* (LL, MICH, US), 8 ft. high; Xiabe, in *acahual*, Aug. 21, 1933, *C. L. Lundell 4909* (F, LL, MICH, MO, NY, US), treelet, 1 in. diam. El Cayo: El Cayo, cut-over cohune ridge, Feb. 19, 1931, *H. H. Bartlett 11573* (F, LL, MICH), shrub 5 ft., fls. pink, frt. dark red; Mountain Pine Ridge, San Agustin, in marginal forest along streams, July–Aug. 1936, *C. L. Lundell 6739* (MICH), shrub, 1.5 m., corolla reddish-pink; Belize-Cayo Road, 38 miles section, broken ridge, Oct. 4, 1957, *Percy H. Gentle 9376* (LL), tree, flowers pink. Orange Walk: vicinity of Tower Hill, 1928, *J. S. Karling 29* (F, type of *P. obovata*; G, US, isotypes); Honey Camp, Sept.–Oct. 1928, *C. L. Lundell 32* (F, US), *33* (F), *63* (F), *68* (F); Sept. 1929, *C. L. Lundell 479* (BM, F, NY, US). Stann Creek: Stann Creek Railway, in swampy places and along riverbanks, alt. 60 ft., Sept. 30, 1929, *W. A. Schipp 415* (A, BM, F, G, GH, MICH, MO, NY, UC), small tree, 5 in. diam., 25 ft. high, flowers pink, stamens yellow; Cow Creek, Alta Visa, creekside, high ridge, Aug. 28, 1953. *Percy H. Gentle 8017* (BM, G, LL), small tree. Toledo: Jenkins Creek, edge of hammock in pine ridge, Aug. 30, 1942, *Percy H. Gentle 4098* (A, F, LL, MICH, MO, NY, US).

I have examined isotypes of *Ardisia cubana* through the courtesy of authorities at Geneva and Paris. The type of *P. corymbosa* Hemsl. (*Juergensen 611*, K) has the inflorescence with terminal leafy bud, but the isotype at the British Museum is typical of the species having pyramidal terminal panicles. This condition is found also in *Contreras 233* (LL.)

30. Parathesis subcoriacea Lundell, Wrightia 2: 73. 1963. Fig. 30 and Plate 18.

Small tree, 3–4 m. high, the twigs rather stout, minutely lepidote, drying brownish; leaves long petiolate, the petioles up to 2 cm. long, obscurely and minutely lepidote beneath, canaliculate; leaf blades lanceolate, 8–15 cm. long, 2.5–5 cm. wide, apex acuminate, the acumen obtusish, base cuneate and decurrent on petiole, subcoriaceous, paler beneath, obscurely pellucid-punctate with orange glands, essentially entire, the young leaves with minute closely appressed stellate hairs, glabrescent early, mature leaves entirely glabrous, costa elevated beneath, the lateral veins fine but evident on lower surface, obscure above; inflorescences terminal or axillary, subequaling the leaves, obscurely and sparingly lepidote-papillose, congested; flowers minutely papillose in few-flowered umbels, the umbels congested; pedicels slender, 2.5–3 mm. long, minutely papillose; flowers at anthesis about 3 mm. long, the calyx and corolla black-punctate in lines; sepals minute, 0.8–1 mm. long, acuminate; petals narrowly triangular, 3 mm. long, short papillose-tomentose within except at base; stamens 2 mm. long, filaments slender, glabrous, epunctate, about 1 mm. long; anthers erect, epunctate, dorsifixed basally, lanceolate, acutish, 1.2–1.4 mm. long; ovary glabrous; style about 3 mm. long, glabrous; placenta depressed-ovoid, apiculate, ovules 10–12, very small, uniseriate.

MEXICO.—Chiapas: Tres Cruces, Sierra Madre, growing amongst trees, alt. 2600 m., Feb. 24, 1945, *Eizi Matuda 5036* (F, LL), tree, 5–6 m. high; Haciendita, near Escuintla, in advanced forest, alt. 1950 m., June 23, 1945, *Eizi Matuda 5985* (LL, type), small tree, 3–4 m. high; Mt. Pashtal, in cloud forest, alt. 2700 m., Apr. 12, 1948. *Eizi Matuda 17679* (F), a tree 6–7 m. tall, *"uva."*

Inflorescences are either terminal or axillary. Noteworthy are the congested few-flowered umbels of very small flowers, small epunctate anthers, slender

Fig. 30. *Parathesis subcoriacea* Lundell. 1, Flowering branch, inflorescences either terminal, or axillary as shown; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, ***Eizi Matuda 5985*** (LL), by Vivien Frazier.

Plate 18. *Parathesis subcoriacea* Lundell. Inflorescence, showing congested umbels of very small flowers. Type, ***Eizi Matuda 5985*** **(LL).**

epunctate filaments, subcoriaceous glabrous leaves, and the glabrous ovary. The number of ovules is unusual for such a small-flowered species.

31. Parathesis mexicana Lundell, Wrightia 2: 66. 1963. Fig. 31.

Tree, twigs finely tomentose with pale brown stellate hairs; leaves thin, the petioles finely tomentose, up to 1.5 cm. long; leaf blades oblanceolate or oblanceolate-elliptic, 9–15 cm. long, 3–5.7 cm. wide, apex subabruptly acuminate, base acuminate and decurrent, subentire, pubescent on undersurface with fine silky stellate sessile hairs, subappressed or rather loose, the marginal zone glabrescent, the costa and lateral veins elevated beneath, rather obscure and plane above; inflorescences terminal, shorter than the leaves, the panicles rather congested, 6–10 cm. long, 5–9 cm. wide at base, finely tomentose with reddish-brown stellate hairs; flowers finely tomentose, in congested corymbs or subracemose, the buds slender, ovoid, 5–6 mm. long; pedicels short, 2.5–4 mm. long; calyx punctate, the sepals ovate, 1.2–1.5 mm. long, acuminate; petals slender, linear-punctate, up to 6 mm. long, papillose-tomentose within along margins and above middle, united at base; stamens 3 mm. long; anthers erect, orange-punctate above point of attachment, lanceolate-oblong, 2 mm. long, apiculate, dorsifixed; filaments punctate, about 1.5 mm. long; ovary hirsute at apex; style hairy at base; placenta cylindrical, subtruncate and minutely apiculate; ovules 5 or 6, enclosed, basally erect, uniseriate; fruits depressed-globose, drying about 6 mm. in diam.

MEXICO.—Michoacan: Coahuayula, Nov. 1906, *G. M. Emrick 51* (F); Hacienda Coahuayula, Nov. 1906, *G. M. Emrick 234* (F); Coalcoman District, San Jose, in woods, alt. 900 m., June 12, 1939, *Geo. B. Hinton 13795* (LL, type; GH, US, isotypes), tree, flowers pink.

Although the filaments are conspicuously punctate, the punctate area of the anthers is rather inconspicuous, orange-colored, and immediately above the point of attachment. Although this is the most distinctive characteristic, *P. mexicana* is distinguished further by its rather small compact inflorescences, short pedicels not over 4 mm. long, fine reddish-brown tomentum of the inflorescences, rather loose fine sessile stellate hairs on undersurface of leaves, and by the cylindrical subtruncate placenta with 5 or 6 ovules.

32. Parathesis Agostiniana Lundell, Wrightia 3: 108. 1964. Fig. 32.

Branchlets rather stout, brown tomentose apically with minute closely appressed stellate hairs; leaves with narrowly marginate petioles 1–2 cm. long; leaf blades lanceolate, lanceolate-oblong, or oblanceolate, 12.5–18 cm. long, 4–6 cm. wide, apex subabruptly acuminate, base cuneate and decurrent on petiole, membranaceous, crenulate, at first pubescent on lower surface with fine stellate ferruginous closely appressed hairs, bizonal, the marginal zone glabrescent early, glabrous above, pellucid-punctate, costa plane above, elevated beneath, primary veins slender; inflorescences terminal, narrowly paniculate, 12–18 cm. long, about 6.5 cm. wide at base, ferruginous-tomentulose with fine small stellate appressed hairs; pedicels slender, short, 2.5–3.5 mm. long, minutely puberulent; flowers corymbose, ferruginous-puberulent, pellucid-punctate, 4–5 mm. long at anthesis; sepals 5, ovate-triangular, about 1 mm. long, acute, pellucid-punctate; petals lanceolate, 4.5–5 mm. long, pellucid-

Fig. 31. *Parathesis mexicana* Lundell. 1, Flowering branch; × ½. 2, Leaf, lower surface; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, *Geo. B. Hinton 13795* (LL), by Vivien Frazier.

Fig. 32. *Parathesis Agostiniana* Lundell. 1, Flowering branch; × ½. 2, Pedicel, calyx and pistil; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *Luis Ruiz Teran 1548* (LL), by Vivien Frazier.

punctate in lines, papillose-tomentose within at apex and along margins; stamens 2.5–3 mm. long; filaments stout, up to 1.2 mm. long, glabrous; anthers erect, ovate-triangular, up to 2.4 mm. long, acute, dorsifixed about one-third above base, conspicuously punctate dorsally with large orange glands; ovary ovoid, with scattered hairs apically, otherwise glabrous; style 3.5–3.75 mm. long, slender; placenta depressed-globose; ovules 6–9, erect, uniseriate, enclosed; fruits globose, drying about 8 mm. in diam.

VENEZUELA.—MERIDA: Bolivia, Cerca de La Azulita, about 500 m., May, 1963, *Luis Ruiz Teran 1548* (LL, type; LL, isotype).

A remarkably distinct species, notable for having leaves and flowers pellucid-punctate. The small broad sepals, and anthers punctate dorsally with large orange glands are distinctive features among the South American species with terminal inflorescences.

In the original description, Bolivia was erroneously given as the country of origin.

33. PARATHESIS ROTHSCHUHIANA Mez, Pflanzenreich IV. 236: 176. 1902.

Ardisia fusca Oerst. var. *glabrata* Oerst., Kjoeb. Vidensk. Meddel. 128. 1861.

Arborescent shrub, 2 m. high; branchlets stout, ferruginous-tomentose; leaves with short narrowly winged petioles 3–15 mm. long, the petioles ferruginous-tomentose on undersurface, canaliculate; leaf blades elliptic, 7.5–13.5 cm. long, 3.2–5.5 cm. wide, acuminate at apex and base, the base decurrent on petiole, chartaceous, rather sparingly black-punctate with small glands, paler beneath, at first pubescent on lower surface with fine stellate sessile appressed hairs, obscurely bizonal, glabrescent, the margin minutely crenulate; inflorescences terminal, paniculate, narrowly pyramidal, up to 15 cm. long, minutely and rather sparingly ferruginous-tomentose; pedicels very short, 1–3 mm. long, papillose-puberulent; flowers subcorymbose, crowded, black-punctate, papillose-puberulent and minutely ferruginous-tomentose in bud with stellate hairs; flower buds before anthesis ovoid, 3–3.5 mm. long; sepals triangular, about 1 mm. long, acute; petals united at base, narrowly lanceolate-triangular, about 4 mm. long, acute, papillose-tomentose within along margins and apically above middle; stamens small, about 2.4 mm. long; filaments glabrous, thick, about 1 mm. long; anthers erect, ovate, about 1.8 mm. long, dorsifixed about one-third above base, the lobes spreading, with a black-punctate area above attachment and extending down into lobes, dehiscent by small apical pores; ovary sparingly papillose at apex, the apex and base of style with a few scattered erect hairs, otherwise glabrous; style slender, 3 mm. long; placenta subglobose, ovules 6, erect, uniseriate, enclosed.

NICARAGUA.—MATAGALPA: an der Grenze der Berg-und Savannenregion, 550 m. u. M., *E. Rothschuh 531* (type at Berlin not seen; LL, type photo), bluht im Marz. ZELAYA: guamil entre El Centro y La Cruz, Rio Grande, alt. 0.15 m., April 26, 1949, *Antonio Molina R. 2449* (F), arbusto 2 m. INDEFINITE: in monte Pantasmo, alt. 3000–4000 ft., Jan. 1848, *A. S. Oersted 37A* (C, type of *Ardisia fusca* var. *glabrata*; LL, isotype).

Although I have not seen the type of *P. Rothschuhiana*, the Molina collection from Nicaragua agrees very closely with the original description and the type photograph. The species has very short pedicels, small flowers with stamens less

than 2.5 mm. long, and ovate anthers dehiscent by small apical pores. It approaches *P. fusca* Oerst. The hairs at base of style, and shorter pedicels apparently distinguish it from that species, as now interpreted.

34. PARATHESIS LANCEOLATA Brandeg., Univ. Calif. Pub. Bot. 6: 188. 1915. Fig. 33.

Shrub or tree, twigs rather slender, minutely ferruginous-tomentose; leaves with slender petioles up to 1 cm. long, ferruginous-tomentose beneath, canaliculate; leaf blades lanceolate or oblanceolate, 8–15 cm. long, 2–4.5 cm. wide, apex and base acuminate, the apex subcaudate, the base decurrent on the petiole, thin, paler beneath, entire or essentially so, pubescent beneath with small fine stellate appressed reddish hairs, bizonal, glabrescent, pellucid-punctate, costa elevated beneath, the veins obscure; inflorescences terminal, laxly paniculate, the branches very slender, pyramidal, up to 18 cm. long, exceeding the leaves, minutely ferruginous-tomentose; flowers small, corymbose or subracemose-corymbose, the rachis accrescent; pedicels slender, 2.5–4 (6) mm. long; flower buds ovoid, very minutely ferruginous-tomentose, about 4 mm. long before anthesis, the calyx and corolla black-punctate in lines; sepals narrowly triangular, 0.8–1 mm. long; petals narrowly lanceolate, up to 4 mm. long, united at base, papillose-tomentose within except at base; stamens about 2.5 mm. long; filaments glabrous, black-punctate, up to 1.4 mm. long; anthers erect, lanceolate-oblong, 1.5–1.8 mm. long, dorsifixed one-third above base, with a conspicuous orange- or black-punctate area dorsally, with glands sometimes extending into lobes, apex obtuse and minutely apiculate; ovary glabrous or sparsely hairy apically, style with a few scattered hairs at base, the style up to 3.5 mm. long; placenta minute, subglobose; ovules 4 or 5, uniseriate, enclosed.

MEXICO.—CHIAPAS: Finca Mexiquito, July, 1913, *C. A. Purpus 7021* (BM, F, GH, MO, NY, UC, US); Cerro del Boqueron, Sept. 1913, *C. A. Purpus 7095* (UC); Finca Irlanda, June, 1914, *C. A. Purpus 7371* (UC, type; A, BM, F, GH. LL, MO, NY, US, isotypes); Mt. Ovando, Apr. 9–12, 1937, *Eizi Matuda 1851* (MICH).

P. lanceolata is noted for its large laxly paniculate inflorescences with very slender weak pendent branches and small flowers. In some characteristics the species resembles *P. columnaris* Lundell.

35. PARATHESIS LAXA Lundell, Wrightia 2: 66. 1963. Fig. 34.

Tree, twigs with minute closely appressed reddish tomentum and papillose; leaves with marginate petioles up to 2 cm. long, at first with minute closely appressed tomentum on undersurface, papillate and canaliculate above; leaf blades lanceolate, 10–20 cm. long, 4–7 cm. wide, apex and base acuminate, thin, obscurely crenulate, pellucid-punctate, undersurface covered at first with fine stellate, silky hairs very closely appressed, glabrescent, upper surface glabrous excepting the sparsely papillose costa, the costa and lateral veins elevated beneath, shallowly impressed above; inflorescences terminal, up to 30 cm. long, 20 cm. wide at base, open, lax, and remotely branched, with rather sparse minute closely appressed tomentum and papillose-puberulent; flowers in umbels, the umbels mostly 1- to 5-flowered; the pedicels slender, papillose, 3–7 mm. long; buds narrowly ovoid, 5–6 mm. long; calyx punctate, papillose, the sepals 1–1.3 mm. long, acuminate; petals up to 6 mm. long, united at base, orange-punctate

Fig. 33. *Parathesis lanceolata* Brandeg. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *C. A. Purpus 7371* (UC), by Vivien Frazier.

Fig. 34. *Parathesis laxa* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *H. Pittier 5927* (NY), by Vivien Frazier.

in lines, papillose on outer surface, papillose-tomentose within over entire surface; stamens about 3.8 mm. long; anthers erect, oblong-lanceolate, about 2.2 mm. long, with a triangular black-punctate area dorsally; filaments glabrous, about 2 mm. long; ovary sparsely pubescent above middle, the style with scattered hairs to or above middle; placenta depressed-globose, apiculate; ovules 8 or 9, enclosed, erect, uniseriate.

VENEZUELA.—Miranda: around Dos Caminos and Los Chorros, alt. 800–1300 m., March 14, 1913, *H. Pittier 5927* (NY, type; US, isotype). Indefinite: province de Caracas, 1842, *J. J. Linden 237* (BM, F, G, GH, K, P).

The large panicles with few-flowered umbels, slender pedicels, rather sparse minute tomentum, style sparingly hairy to or above middle, and ovules 8 or 9 serve to mark *P. laxa*. The papillose indument, present even on the costa of leaves above, gives parts of the stems and inflorescences a farinose appearance. The fine stellate silky appressed hairs on undersurface of leaves are conspicuous only at first.

36. Parathesis hondurensis Standl., Field Mus. Pub. Bot. 22: 163. 1940. Fig. 35.

Shrub, up to 4 m. high, branchlets rather stout, at first ferruginous-tomentose with fine stellate hairs, glabrescent; leaves with petioles 6–20 mm. long; leaf blades lanceolate or lanceolate-oblong, 9–17 cm. long, 3.5–6.5 cm. wide, apex subabruptly acuminate, base cuneate and decurrent, subcoriaceous, the margin undulate-dentate, upper surface rugulose, sparsely stellate-pubescent at first especially along midvein, the pubescence of lower surface bizonal, rather loosely stellate-pubescent in costal zone, the hairs appressed and thinner in marginal zone, glabrescent, the costa stout and elevated beneath, nearly plane above, the primary lateral veins slender but conspicuous beneath, slightly impressed above; inflorescences terminal, narrowly pyramidal, tripinnately paniculate, up to 12.5 mm. long, finely ferruginous-tomentose at first with stellate hairs, glabrescent and papillose-puberulent with age; flowers subcorymbose, finely tomentose with ferruginous stellate hairs, about 5 mm. long at anthesis; pedicels 4–7 mm. long; sepals 1.2–1.8 mm. long, acuminate, black-punctate; petals linear-lanceolate, up to 6 mm. long, papillose-tomentose within except at base, black-punctate in lines; stamens 3.5–4 mm. long; filaments stout, about 1.5 mm. long; anthers erect, lanceolate, attenuate, apiculate, 2.5–3.4 mm. long, dorsifixed one-third above base, with large black-punctate area dorsally, the glands extending into lobes; ovary ovoid, attenuate into style, rather sparsely pilose apically; ovules 4–8, uniseriate, enclosed; fruits globose, drying 6–7 mm. in diam., with a few persistent hairs at apex.

HONDURAS.—Morazan: Rio Yeguare, alt. 800 m., Apr. 1944, *Juvenal Valerio Rodriguez 2114* (F); vicinity of El Zamorano, pine-oak forest, alt. 780–900 m., Nov. 26, 1946–Jan. 9, 1947, *Paul C. Standley 198* (F), shrub 3 m., fruit black, juicy, edible, "*sarcil*"; Vegas del Rio Jalan, cerca de Pueblo Nuevo a 5 Kms. de Guaimaca, alt. 800 m., May 12, 1950, *Antonio Molina R. 2813* (F, GH, US), fls. rosadas, arbusto 2 m., "*zarcil.*" Tegucigalpa: Tegucigalpa, Mont. de la Flor, pine and oak region near river, alt. 3200 ft., Dec. 1937, *Christine von Hagen & Wolfgang von Hagen 1240* (F, type; NY, isotype), shrub 5 ft. high, fruit edible, "*uva.*" Yoro: matorrales de Quebrada Olotillo, 15 kms. de Yoro, alt. 1100 m., May 8, 1956, *Antonio Molina R. 6830* (F), arbol 5 m.

Fig. 35. *Parathesis hondurensis* Standl. 1, Fruiting branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Fruiting branch illustrated from type, *Christine von Hagen & Wolfgang von Hagen 1240* (F); flowers from *Antonio Molina R. 2813* (F), by Vivien Frazier.

NICARAGUA.—Zelaya: vicinity of El Recreo, on Rio Mico, wet thicket, alt. about 30 m., Apr. 23–May 14, 1949, *Paul C. Standley 19805* (F), shrub 3 m.

Described from fruiting material, this has been one of the most exasperating species to tie down. Flowering specimens from the type locality are not available, and my description of the flowers of *P. hondurensis* is based on *Molina 2813* which I judge to be this species. The fruits of the type bear persistent slender hairs below base of style, and these match those of the ovary of the Molina collection.

Although numerous collections of *Parathesis* have been made in Honduras in the past two decades, most of these are in fruit and of little value for working out relationships. The Honduran species are not well-marked which accounts also for their being poorly understood.

37. Parathesis ferruginea Lundell, Wrightia 2: 64. 1963. Fig. 36.

Arborescent shrub, up to 8 m. high; twigs rather slender, finely tomentose with reddish-brown stellate hairs; leaves with rather stout petioles 1–2 cm. long, the petioles tomentose, glabrescent above; leaf blades lanceolate-oblong or oblanceolate, 7.5–15 cm. long, 2.8–5.3 cm. wide, apex acuminate or subabruptly acuminate, base narrowed and decurrent on the petiole, paler beneath, pellucid-punctate, bizonal, pubescence of the costal zone reddish and finely stellate, appressed, the marginal zone glabrescent, the margin finely crenulate or sometimes rather coarsely crenulate-dentate, the costa elevated beneath, plane above, the lateral veins fine; inflorescences terminal, laxly pyramidal, up to 18 cm. long, thinly tomentose with fine reddish-brown stellate hairs; flowers finely tomentose, corymbose or subracemose-corymbose; pedicels slender, 5–9 mm. long; flower buds lanceolate, up to 6 mm. long before anthesis, the calyx and corolla black-punctate in lines; sepals 1.6–2 mm. long, attenuate, acuminate; petals linear-lanceolate, up to 7 mm. long, papillose-tomentose within except at base; stamens 4–4.5 mm. long; filaments glabrous, rather stout, about 1.8 mm. long, anthers erect, dorsifixed above base, linear-lanceolate, 3–3.7 mm. long, apex attenuate, with a conspicuous black-punctate area with glands extending into basal lobes; ovary hirsute apically, often sparingly, and at base of style, otherwise glabrous; style slender, about 6 mm. long; placenta globose, with 4 or 5 ovules, the ovules uniseriate, enclosed.

MEXICO.—Jalisco: swampy woods 20 miles south-southwest of Autlan and 2 miles north of La Resolana, c. 1000 ft. alt., July 7, 1949, *R. L. & C. R. Wilbur 1562* (LL, MICH), a rather uncommon shrub about 7 m. high, petals and calyx rose-colored, anthers yellow, the filaments rose, style white, young fruit dull red; steep wooded hills above the river (a tributary of Rio Cihuatlan), ca. 11 miles north of bridge of Rio Cihuatlan on road from Santiago, Colima to Durazno, Jalisco, in oak zone, with abundant bamboos, abundant in deep rocky ravine near small stream, elevation 500–550 m., Aug. 1, 1957, *Rogers McVaugh 15975* (LL, type; MICH, isotype), treelike shrub 5 m. high, flowers pink, fruit red, then black. Nayarit: Tepic, Jan. 5–Feb. 6, 1892, *Edward Palmer 1988A* (GH, LL, MICH, NY, UC, US); Territorio de Tepic, Pedro Paulo, Aug. 3, 1897, *J. N. Rose 3331* (US); mountains 9 miles north of Compostela, steep heavily forested stream valley in oak zone, occasional in barranca, elev. 1000–1200 m., Nov. 12, 1959, *Rogers McVaugh & Walter N. Koelz 527* (LL, MICH), shrub 2 m. high with drooping inflorescences, immature berries pinkish, ripe berries purplish-black; landward-facing mountainsides above La Cucaracha, 12–14 miles south of Las Varas, tropical forest of

Fig. 36. *Parathesis ferruginea* Lundell. 1, Flowering branch with undersurface of leaves showing bizonal pubescence; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from isotype, *Rogers McVaugh 15975* (MICH), by Vivien Frazier.

Orbignya, *Brosimum*, *Calophyllum*, *Licania*, *Psidium*, abundant in wet forests elev. 300–350 m., Sept. 19–20, 1960, *Rogers McVaugh 19160* (LL, MICH), treelike, to 8 m. high, flowers pink.

The long slender anthers suggest *P. columnaris*, and its leaves have similarities to *P. prionophylla* Standl. It is at once recognizable from both of these by the finer strictly appressed pubescence of the undersurface of the leaves. Although the leaf blades are predominantly crenulate, they are sometimes rather coarsely crenulate-dentate, suggesting *P. prionophylla* in this respect. The fruits are often infested by insects, and gall-like.

38. PARATHESIS ROSEA Lundell, Wrightia 2: 72. 1963. Fig. 37.

Shrub, up to 3 m. high, the twigs rather stout, tomentose with brownish, fine stellate, appressed hairs; leaves with stout petioles 7–14 mm. long, canaliculate, glabrescent above; leaf blades oblong-elliptic, 10–17 cm. long, 3.2–6.5 cm. wide, apex subabruptly acuminate, base cuneate and decurrent on petiole, chartaceous, paler beneath, pellucid-punctate, thinly pubescent on lower surface with very fine closely appressed stellate hairs, glabrescent in marginal zone, the margin irregular but essentially entire; inflorescences terminal, broadly pyramidal, up to 15 cm. long, finely and sparingly brown-tomentose; flowers in corymbs, short villous; pedicels slender, 3–5 mm. long; flower buds at anthesis ovoid, about 6.5 mm. long, the calyx and corolla black-punctate, the corolla in lines; sepals 1.5 2 mm. long, acuminate; petals linear-lanceolate, about 7 mm. long, papillose-tomentose within above middle and along edges; stamens erect, 3 mm. long; filaments stout, about 1.7 mm. long, glabrous; anthers ovate-lanceolate, about 2.2 mm. long, acutish, dorsifixed, with a small triangular black-punctate area at point of attachment, the lobes spreading at base; ovary pubescent apically; the style slender, about 4.5 mm. long, with scattered erect hairs on basal third; placenta depressed-globose; ovules 6, erect, uniseriate, enclosed.

MEXICO.—JALISCO: Sierra del Halo, near a lumber road leaving the Colima highway 7 miles south-southwest of Tecalitlan and extending southeasterly toward San Isidro, steep slopes in pine-oak forest, 2 5 miles from the highway, abundant in barranca, elev. 1400–1500 m., June 23, 1957, *Rogers McVaugh 15021* (LL, type; MICH, isotype), shrub to 3 m. high, flowers dull pink, fruit red.

A Nee collection from Acapulco (F) may be referable here.

39. PARATHESIS RETICULATA Lundell, Wrightia 2: 71. 1963. Fig. 38.

Small tree, up to 5 m. high; branchlets stout, ferruginous-tomentose with fine closely appressed stellate hairs; leaves with marginate petioles up to 2 cm. long, the petioles finely tomentose beneath, canaliculate; leaf blades elliptic, oblanceolate or obovate-elliptic, 10–25 cm. long, 4.5–9 cm. wide, apex subabruptly acuminate, base narrowed, acute and decurrent, membranaceous, black-punctate, drying brown and slightly paler beneath, bizonal, pubescent on lower surface with fine appressed stellate ferruginous hairs, the marginal zone glabrescent, the margin rather obscurely crenulate, the costa stout and elevated beneath, the lateral veins slender but conspicuous on undersurface, prominently reticulate-veined, sometimes areolate; inflorescences terminal, tripinnately paniculate, up to 20 cm. long, ferruginous-tomentose with fine appressed stellate

Fig. 37. *Parathesis rosea* Lundell. 1, Flowering branch, and infructescence; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type, ***Rogers McVaugh 15021*** (LL), by Vivien Frazier.

Fig. 38. *Parathesis reticulata* Lundell. 1, Flowering branch with bizonal pubescence showing on undersurface of leaves; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *Herbert H. Smith 1725* (NY), by Vivien Frazier.

hairs, the branches rather sparingly so and papillose-puberulent; the flowers corymbose or subcorymbose; pedicels papillose-puberulent, 3–5 mm. long; flower buds before anthesis lanceolate, about 5 mm. long; sepals minute, ovate-triangular, acute, 0.8–1 mm. long, black-punctate, papillose-puberulent; petals densely papillose-puberulent, black-punctate in lines, lanceolate, up to 5.5 mm. long, papillose-tomentose within apically and along margins; stamens 3 mm. long; filaments stout, about 1.8 mm. long, glabrous; anthers erect, lanceolate-elliptic, about 2 mm. long, apex obtuse and apiculate, dorsifixed one-third above base, with large triangular black-punctate area above attachment, with glands extending down into lobes; ovary pubescent apically; style with scattered hairs to middle, about 3.5 mm. long; placenta columnar; ovules 6–9, asymmetrically oblong-obovoid, uniseriate, enclosed; fruits depressed-globose, up to 7 mm. in diam. when dry, shallowly costate.

COLOMBIA.—Magdalena: Santa Marta, 1846–1852, *L. J. Schlim 707* (P); Santa Marta, mountain forest near Valparaiso, elev. 3000–4500 ft., 1898 1899, *Herbert H. Smith 1725* (NY, type), a small tree, flowers March to May; Sierra Nevada de Santa Marta, Minca, alt. 1000–1500 m., *F. C. Lehmann 7346* (F); western slope of Cordillera de Santa Marta, around San Andres de la Sierra, alt. 1100–1300 m., June 1–6. 1906, *H. Pittier 1646* (NY, US); lower slopes of Mount San Lorenzo, near Santa Marta, alt. 1300 m., 1932, *William Seifriz 64* (LL, US); between Pueblo Viejo and San Miguel, alt. 900–1700 m., July, 1932, *William Seifriz 543* (US); Sierra de Santa Marta, San Antonio, heavy forest in foothills, alt. 3000 ft., June 15, 1939, *J. Hanbury-Tracy 450* (K, US), shrub, 8–10 ft. high, flowers lilac; Sierra Nevada de Santa Marta, headwaters of Rio Frio, Hacienda San Jose, Quebrada San Jose, alt. 1110 m., June 21, 1944, *H. S. Kernan 136* (NY, US), 16 ft. shrub in understory, "*fruta de pava*"; Santa Marta, *Wm. Purdie s.n.* (GH, K).

P. reticulata is perhaps near *P. emarginata* but differs in its smaller obtuse and apiculate anthers, larger areolate leaves, ovary pubescent rather sparingly at apex, and in having oblong-obovoid ovules almost twice as large.

40. Parathesis reticulata var. sinuata Lundell, Wrightia 2: 72. 1963. Fig. 39.

Arborescent shrub up to 7 m. high, branchlets finely ferruginous-tomentose with appressed stellate hairs; leaves with petioles up to 2 cm. long; leaf blades with sinuate margins, bizonal beneath, glabrescent, reticulate-veined; inflorescences terminal, finely and persistently ferruginous-tomentose with stellate appressed hairs; flowers at anthesis up to 5.5 mm. long, finely tomentose and papillose-puberulent; sepals 1–1.5 mm. long, acuminate; stamens up to 3.5 mm. long; anthers erect, narrowly triangular, tapering to the obtuse and apiculate apex; ovary rather sparingly pubescent at apex.

COLOMBIA.—Magdalena: Santa Marta, without locality, alt. 3000 ft., 1853, *L. J. Schlim 707* (F, G); Santa Marta, alt. 1500 ft., May, 1898–1901, *Herbert H. Smith 444* (A, GH, MO, S, UC); Santa Marta, on the Donamo Road, occasional on banks of streams in forest, below 1200 ft., April 8, 1898–1899, *Herbert H. Smith 1724* (NY, type; A, BM, F, G, GH, LL, MO, S, US, isotypes). Indefinite: Comisaria Goajira, 10 km. south of Carraipia, along stream through forest, alt. 350 m., July 4, 1944, *Oscar Haught 4236* (NY, UC), large shrub, 3 m. high, smooth leaves, showy inflorescences of red flowers with conspicuous yellow anthers.

The collection, *Schlim 707*, is a mixture of *P. reticulata* var. *sinuata* and *P. reticulata* Lundell (P). *Smith 444* is a mixture with *P. emarginata* Lundell. On

Fig. 39. *Parathesis reticulata* var. *sinuata* Lundell. 1, Flowering branch, showing sinuate leaf margin; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type, *Herbert H. Smith 1724* (NY), by Vivien Frazier.

the label of the type (*1724*), Smith notes: "Perhaps a variety of No. 444, but the latter is a large tree and begins to flower in May."

41. Parathesis crenulata (Vent.) Hook.f., ex Hemsl., Biol. Centr. Amer. Bot. 2: 291. 1882. Fig. 40 and Plate 19.

Ardisia crenulata Vent., Choix de plantes, 5, *pl. 5*. 1803.

Shrub or small tree up to 3 m. high, branchlets slender to stout, closely appressed tomentose with very fine stellate ferruginous to pale golden-brown hairs, glabrescent; leaves with marginate petioles 0.8–2 cm. long, the petioles canaliculate, at first sparsely papillose-puberulent above, fine stellate pubescent beneath with very small appressed hairs; leaf blades narrowly oblanceolate, rarely oblanceolate-elliptic, 7–17 cm. long, 1.5 5.5 cm. wide, apex subabruptly acuminate, the acumen sometimes cuspidate, narrowed to the acuminate and decurrent base, thin, chartaceous, pellucid-punctate, drying brown, slightly paler beneath, only the young leaf bizonal on undersurface, often obscurely so, the marginal zone paler, the pubescence of very fine small stellate closely appressed hairs, glabrescent early and often appearing glabrous, the margin repand and rather obscurely crenulate, sometimes appearing entire, the costa elevated beneath, nearly plane above, the primary lateral veins fine and evident beneath, rather obscure above, finely reticulate-veined; inflorescences terminal, paniculate, tri-pinnately branched at base, pyramidal, 7.5–13 cm. long, papillose-puberulent and sometimes thinly tomentose with minute stellate hairs; flowers corymbose, the pedicels slender 2.5–5 (6) mm. long; flower buds lanceolate, about 5 mm. long before anthesis, the calyx and corolla papillose-puberulent, and usually tomentulose with minute stellate hairs; sepals 1 1.5 mm. long, acuminate, rather obscurely punctate; petals united at base, narrowly lanceolate, up to 5 mm. long, papillose-tomentose within along margins and apically, black-punctate in lines; stamens about 3 mm. long; filaments stout, glabrous, about 1.5 mm. long; anthers broadly lanceolate, 2.2–2.4 mm. long, dorsifixed one-third above base, with conspicuous black-punctate triangular area above attachment and with glands extending into lobes, the punctate area often elevated, apex apiculate; ovary with occasional stiff hairs at apex, the style with occasional hairs, the ovary and style often glabrescent; style about 3.5 mm. long; placenta ovoid-ellipsoid, short acicular apically; ovules 6–8, uniseriate, oblong-ellipsoid, erect, enclosed; fruits black at maturity, globose, up to 8 mm. in diam. when dry.

HAITI.—Indefinite: Chardonette, Arrondissement de Jeremie (several km. southwest of Beaumont) north of divide at lower edge of the pine forest, off the main road from Les Roseaux to Les Cayes, alt. 2000 ft., May 11, 1941, *H. H. Bartlett 17326* (US), shrub 3–5 ft., fls. pink.

DOMINICAN REPUBLIC.—Indefinite: without locality, 1802, *A. Poiteau s.n.* (G); without locality, Apr. 20, 1863, *L. A. Prenleloup 318* (G, US); without locality, Jan. March, 1871, *C. Wright, C. C. Parry, H. Brummel 236* (F, US); without locality, 1873, *Robert Schomburgk s.n.* (K, P); in sylvestribus ad Jarabacoa, alt. 550 m., May 24, 1887, *H. F. A. Eggers 2100* (NY, US); Sanchez, Province of Samana, Cañon, Las Canita, Oct. 23, 1909, *N. Taylor 49* (F, NY), shrub 10 ft., fruit black; Prov. Barahona, Paradis, alt. 250 m., 1910, *Padre Miguel Fuertes 64* (BM, F, G, GH), *454* (A, G, NY, US), bl. carmin.; Jarabacoa, alt. 400 m., July, 1910, *H. von Tuerckheim 3510* (G, NY); Barrancota River, 9 mi. south of Sanchez, in swamp at mouth, May 1, 1921, *W. L. Abbott 1449* (US); vicinity of San Francisco de Macoris, Provincia Pacificador, alt. 400–1000 m., Apr. 5–17, 1922, *W. L. Abbott 2032* (US); vicinity of Samana, Samana Peninsula, sea level to 200 m. alt., May 20, 1922, *W. L. Abbott 2411* (US),

Fig. 40. *Parathesis crenulata* (Vent.) Hook.f. 1, Flowering branch; × ½. 2, Pedicel and calyx; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from *E. L. Ekman H12417* (US), by Vivien Frazier.

Plate 19. *Parathesis crenulata* (Vent.) Hook.f. Typical specimen of the species, showing narrow leaves widest at or above middle and sharply acuminate, *E. L. Ekman H12417* (S).

shrub or small tree; Cordillera Central, prov. Sto. Domingo, La Cumbre, in old clearing at Arroyo Los Guananitos, May 8, 1929, *E. L. Ekman H12417* (A, F, S, US), pet. red, ripe fruits black, "*jalapago.*"

PUERTO RICO.—INDEFINITE: Sierra de Luguillo, Apr. 1883, *H. F. A. Eggers 1240* (C, K, US), arbor 8′–10′ alt., florib. violaceis, anth. luteis; El Sobrante, 700 m., May, 1883, *H. F. A. Eggers 1006* (G); localities various, 1884–1886, *P. Sintenis 329* (BM, G, GH, US), *1457* (BM, G, GH, NY, US), *2043* (G, S), *2402* (MICH, NY, P), *4244* (UC), *4473* (G, MICH, P, S); 9 miles N. of Caguas, bank of stream, May 27, 1899, *Mr. & Mrs. A. A. Heller 1399* (NY); Cayey, along stream, June 14–July 22, 1901, *L. M. Underwood & R. F. Griggs 402* (NY, US); near Bayamon, July 18, 1901, *L. M. Underwood & R. F. Griggs 890* (NY, US); Mount Mandios, near Jayuya, upper slopes, Mar. 17, 1906, *N. L. Britton & John F. Cowell 932* (F, NY, US); Rio Piedras, Apr. 5, 1912, *J. R. Johnston & H. B. Cowgill 203* (NY); Candelaria, near Bayamon, wooded limestone hill, 1913, *N. L. Britton, W. E. Hess & Delia W. Marble 2868* (F, MO, NY, US); Finca Bueno Consejo, Rio Piedras, May, 1914, *Bro. Hioram s.n.* (GH, NY, S, US); vicinity of Ala de la Piedra above Villalba, river thicket, about 800 m. alt., Mar. 3, 1922, *N. L. Britton, E. G. Britton & Margaret S. Brown 6381* (G, NY), shrub 1 m., fruit black; limestone hill near Poa Alta, Mar. 29, 1923, *N. L. Britton & E. G. Britton 7855* (NY), shrub 1 m., fruit black; coastal forest, Mar. 14, 1924, *N. L. Britton & E. G. Britton 8105* (NY), shrub 2 m., fruit black; Lares, shrub in woods, May 23, 1937, *F. H. Sargent A48* (US); Ins. Exp. Sta. woodlot, Oct. 18, 1940, *L. E. Gregory 223* (NY), shrub 6 ft. tall.

Apparently described from cultivated material grown from seed collected in the Antilles, the existence of a type of *Ardisia crenulata* Vent. remains to be determined. My recognition of the species is based on the full page illustration and ample original description by Ventenat, and the Poiteau specimen at Geneva from the Ventenat herbarium. In the absence of a holotype, I have designated *Ekman H12417* as icotype (US). This will provide a further reference to my interpretation of the taxon.

I consider *Parathesis crenulata* a clearly defined species, not to be confused with *P. serrulata* (Sw.) Mez. It is restricted like the latter to the West Indies. The sharply acuminate often cuspidate leaves, minute closely appressed stellate often bizonal pubescence of undersurface of very young leaves, plant almost entirely glabrescent with age, larger flowers with slenderer buds, and anthers without hairs at apex are characteristics which clearly distinguish *P. crenulata* from *P. serrulata.* In *P. crenulata* the leaf blade is very thin and usually reticulate-veined on both surfaces and the margin, although repand and obscurely crenulate, appears subentire. The papillose-puberulent upper surface of petiole is to be noted.

42. PARATHESIS MEMBRANACEA Lundell, Wrightia 1: 58. 1945. Fig. 41.

Branchlets rather stout, persistently brown tomentose, the hairs minute; leaves with petioles 1–2 cm. long, canaliculate; leaf blades membranaceous, elliptic or obovate-elliptic, 8.5–15 cm. long, 4.5–7.5 cm. wide, apex abruptly acuminate, base decurrent on the petiole, stellate-pubescent on the undersurface at first, the fine hairs appressed, essentially glabrous with age, glabrous on upper surface, black-punctate, finely reticulate-veined, primary veins 12–15 on each side, conspicuous on undersurface, plane or slightly impressed on upper surface, margin conspicuously dentate almost to base; inflorescences leafy, terminal, narrowly paniculate, finely tomentose, 8–10 cm. long; flowers corymbose, finely tomentose, borne on pedicels up to 4 mm. long; buds about 5 mm. long; sepals 1.3–1.5 mm. long; petals about 5.5 mm. long, narrowly lanceolate, atten-

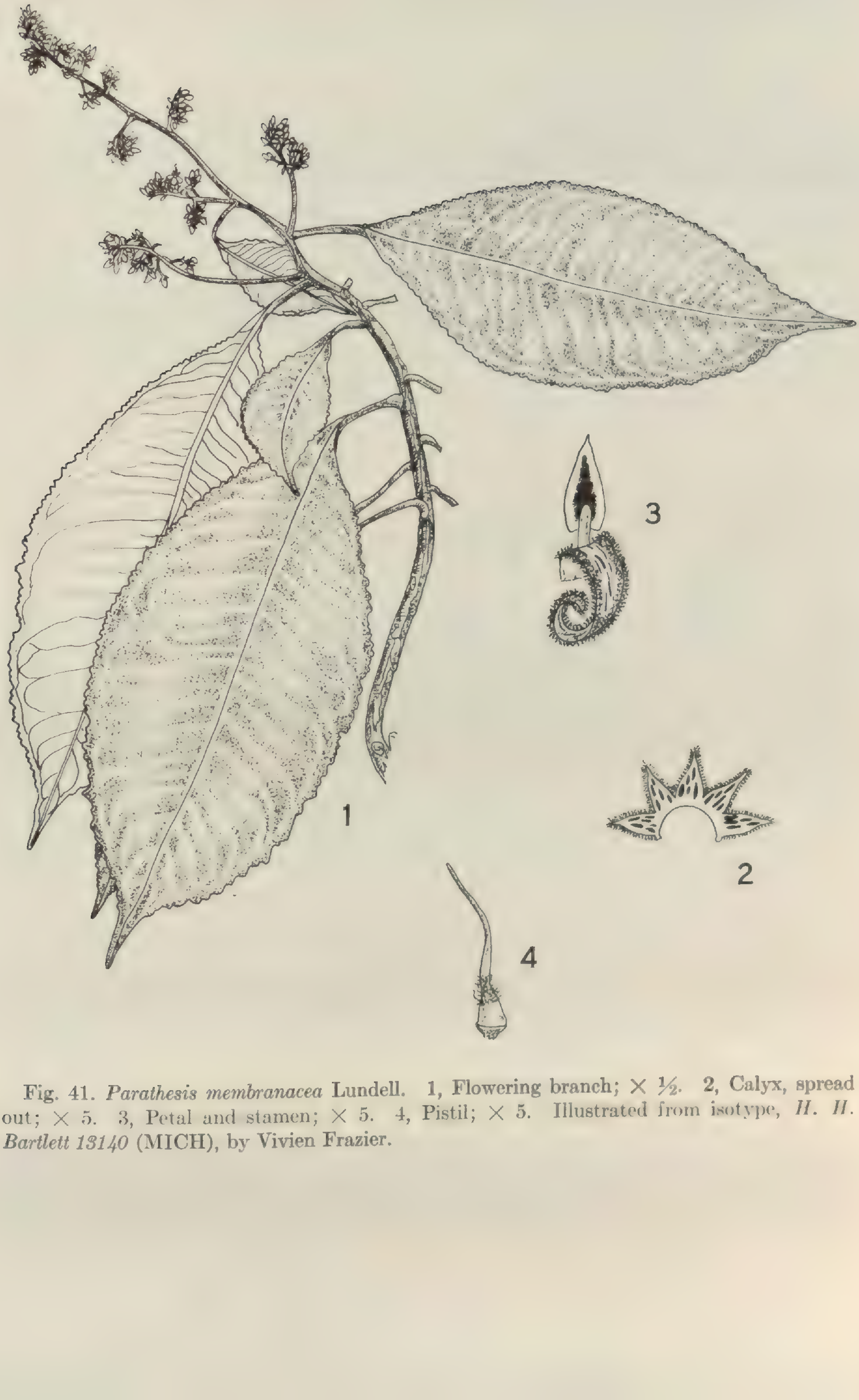


Fig. 41. *Parathesis membranacea* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from isotype, *H. H. Bartlett 13140* (MICH), by Vivien Frazier.

uate to the apex, punctate; filaments stout, about 1.3 mm. long; anthers ovate-lanceolate, 2.2 mm. long, apiculate, conspicuously black-punctate; ovary with a few hairs at apex, glabrous otherwise; style 3.5 mm. long, glabrous.

BRITISH HONDURAS.—El Cayo: Tea Kettle, May 12, 1931, *H. H. Bartlett 13140* (LL, type; MICH, US, isotypes), small tree, fls. dull pink.

43. Parathesis fusca (Oerst.) Mez, Pflanzenreich IV. 236: 175. 1902.
Fig. 42 and Plate 20.

Ardisia fusca Oerst., Kjoeb. Vidensk. Meddel. 127, *t. 2.* 1861.
Tinus fusca (Oerst.) O. Ktze, Rev. Gen. 2: 974. 1891.

Shrub, branchlets rather stout, densely appressed ferruginous-tomentose; leaves with slender petioles, the petioles 5–15 mm. long, canaliculate, tomentose on undersurface; leaf blades elliptic, oblong-elliptic or rarely obovate-elliptic, 6–17 cm. long, 2.5–6 cm. wide, acuminate and decurrent on petiole at base, apex subabruptly acuminate, thinly chartaceous, obscurely bizonal, pubescent on undersurface with appressed or subappressed sessile stellate hairs, the marginal zone glabrescent, sparingly papillose above at first along costa, rarely sparingly pubescent, the margin finely crenulate, costa elevated and stellate pubescent beneath, plane above, the lateral veins slender but conspicuous and reticulate on undersurface, rather sparsely punctate; inflorescences terminal, paniculate, usually up to 15 cm. long, rarely as much as 22 cm. long, ferruginous-pubescent or tomentose with short sessile stellate hairs, and papillose; flowers corymbose or subracemose-corymbose, the calyx and corolla ferruginous-tomentose with short sessile stellate rather fine bristly hairs, and papillose; pedicels slender, 2.5–6 mm. long; flower buds before anthesis ovoid, 4–5 mm. long or sometimes slightly longer; sepals narrowly triangular, 1–1.6 mm. long, attenuate-acuminate, the apex usually cuspidate and often recurved after anthesis, usually orange-punctate, but sometimes black-punctate; petals linear-lanceolate, 4–5 mm. long or sometimes slightly longer, acuminate, united at base, papillose-tomentose within along margins and above middle; stamens 2.5–3.5 mm. long; filaments stout, glabrous, about 1.4 mm. long; anthers erect, lanceolate, 1.8–2 mm. long, dorsifixed one-third above base, with conspicuous oblong-triangular punctate area above attachment and with glands extending down into lobes, apex obtuse or rounded and minutely apiculate; ovary and style glabrous; style slender, 3.5–4.5 mm. long; placenta broadly obovoid, the ovules 6–8, erect, uniseriate, enclosed.

HONDURAS.—Yoro: pinares del campo de aviacion de Yoro, alt. 800 m., May 9, 1956, *Antonio Molina R. 6865* (F), fls. blancas, planta 0.5 m.

NICARAGUA.—Chontales: vicinity of La Libertad, moist thicket along river, about 500–700 m., May 29–June 1, 1947, *Paul C. Standley 8996* (F, LL), shrub 3 m., fls. pink. Zelaya: area de Ocotal, Rio Grande, Apr. 23, 1949, alt. 0–15 m., *Antonio Molina R. 2321* (F), fls. rosadas, arbusto 1 m.; Montaña Esquipulas, alt. 130 m., Nov. 22, 1951, *Paul J. Shank & Antonio Molina R. 4704* (F), arbusto 1–2 m.

COSTA RICA.—Cartago: Turrialba, alt. 200 m., June 5, 1891, *Adolfo Tonduz 4080* (US); Turrialba, Apr. 27, 1903, *O. F. Cook & C. B. Doyle 377* (LL, US), flowers pink, yellow center; Rio Turrialba, alt. 1600 pp., Mar. 1894, *John Donnell Smith 4883* (GH, US); flood plains of Rio Reventazon, near Inter-American Institute of Agricultural Sciences, 3 km. SE of Turrialba, in tropical rain forest, alt. 500–600 m., June 20, 1949, *Richard W. Holm & Hugh H. Iltis 20* (F), tree 2.5 m. high, petals whitish, buds and pedicels reddish-purple. San Jose: vicinity of

Fig. 42. *Parathesis fusca* (Oerst.) Mez. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petals and stamen; × 5. 4, Pistil; × 5. Illustrated from type, *A. S. Oersted 37* (C), by Vivien Frazier.

Plate 20. *Parathesis fusca* (Oerst.) Mez. Flowering branch, showing typical leaf, *Paul C. Standley 8996* (F).

El General, bank of river, alt. 640 m., Jan. 1939, *Alexander F. Skutch* 3857 (A, MO, NY, S, US), shrub 5 m., fls. pinkish; basin of El General, bank of river, alt. 675–900 m., Feb. 1940, *Alexander F. Skutch 4696* (F, MO, US), shrub 4 m., fls. pinkish. INDEFINITE: in Monte Irasu, Jan. 1947, *A. S. Oersted 37* (C, type; LL, isotype).

PANAMA.—PANAMA: Rio Tecumen, moist forest, Jan. 3, 1924, *Paul C. Standley 29349* (US), *29365* (US), shrub, 8–10 ft., fruit black-purple; near Jenine along Pan-Am Highway, by stream, Rio Caneta, Sept. 24, 1961, *J. A. Duke 3880* (LL), shrub, fruits pinkish, turning black. INDEFINITE: *B. C. Seemann 1611* (BM).

COLOMBIA.—EL VALLE: Rio de la Teta, upper Cauca Valley, alt. 1000–1300 m., *F. C. Lehmann 5800* (F); Cauca Valley, Quebrada Nueva to Cuchilla, East of Zarzal, alt. 1100 1300 m., July 21–22, 1922, *Francis W. Pennell, Ellsworth P. Killip & Tracy E. Hazen 8501* (GH, NY, US), tree, fruit black; El Negro, Cordillera Central, alt. 1400 m., Mar. 1939, *E. Dryander 2326* (US), *2341* (US), *2348* (US), tree 4–5 m., fls. rose, yellow within, fruit blue. INDEFINITE: Flora Neogranadina-Caucana, La Paila, April 11, 1853, *I. F. Holton 615* (G); prov. de Cauca, 1853, *J. J. Triana 4222* (BM), fl. in July.

VENEZUELA.—INDEFINITE: Montaña de Loco, near La Victoria, May, 1898, *Alfredo Jahn 210* (LL, US).

The Molina collection from Honduras and the two Standley collections from Rio Tecumen in Panama are atypical, and possibly not of this species.

In *P. fusca* the attenuate-acuminate sepals, usually cuspidate and slightly recurved apically after anthesis, are distinctive. The flowers are punctate, but usually orange-punctate, especially the sepals. The rays of the stellate hairs on the undersurface of leaf are suberect or sometimes erect in costal zone, rarely appressed.

In some South American collections of *P. fusca* there are slightly larger stamens, about 0.5 mm. longer, and the sepals are black-punctate rather than orange-punctate as in Central American collections. In *Jahn 210* (US) from Venezuela, there are a few scattered hairs at apex of ovary and base of style, but in all other collections the ovary and style are glabrous.

Oersted 37A, collected "In monte Pantasmo," which was cited by Mez (l.c.) in his description of *P. fusca*, has base of style and apex of ovary with scattered stiff erect hairs as described for *P. Rothschuhiana* Mez, and shown by Mez in his sketch of the flower of the type (LL, type photo). *P. Rothschuhiana* is very close to *P. fusca*, but in the absence of the type, the question of its recognition remains unsolved. As represented by *Oersted 37A* (C, LL), and *Molina 2449* (F), the hairs of style and apex of ovary, shorter pedicels, smaller sepals, and somewhat finer silkier appressed stellate pubescence of undersurface of leaves serve to distinguish *P. Rothschuhiana* from *P. fusca*.

44. PARATHESIS OBLANCEOLATA Lundell, Wrightia 3: 67. 1963. Fig. 43.

Shrub, branchlets slender and short to rather stout and elongated, ferruginous-tomentose with fine sessile subappressed stellate hairs; leaves with rather slender petioles 5–15 mm. long; leaf blades oblanceolate, 7.5–20 cm. long, 2–5.5 cm. wide, apex caudate-acuminate or acuminate, base acuminate and decurrent, entire, or inconspicuously crenulate, chartaceous, punctate with small black glands, at first uniformly pubescent beneath with fine sessile stellate ferruginous hairs, the rays spreading and subappressed, glabrescent, midvein prominent beneath, slightly impressed above, primary lateral veins elevated beneath, obscurely impressed above; inflorescences terminal, tripinnately paniculate, the branches slender, sparsely pubescent, the stellate spreading hairs with

Fig. 43. *Parathesis oblanceolata* Lundell. 1, Flowering branches; × ½. 2, Leaf; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, *Julian A. Steyermark 45853* (F), and isotype (LL), by Vivien Frazier.

slender rays, and papillose-puberulent; pedicels rather slender, 3–5 (7) mm. long; flowers corymbose, sparingly ferruginous-tomentose, the buds very slender, about 4.5 mm. long; sepals narrowly triangular, 1–1.4 mm. long, acuminate, black-punctate; petals linear-lanceolate, up to 5 mm. long, papillose-tomentose within along margins and apically, black-punctate in lines; stamens about 3 mm. long; filaments stout, 1.5–1.8 mm. long; anthers erect, narrowly lanceolate, about 2.2 mm. long, dorsifixed one-third above base, with conspicuous black-punctate dorsal area extending into lobes; ovary tapering into style, pubescent apically, usually with scattered short rather stiff hairs; style about 4.5 mm. long, with a few hairs at base; ovules 6 or 7, uniseriate.

GUATEMALA.—Alta Verapaz: near Finca Sepacuite, road from Cajabon, Apr. 20, 1902, *O. F. Cook & R. F. Griggs 687* (US); along Rio Santa Isabel, between mouth of Rio Sebol and El Porvenir, steep shaley slopes, alt. 100 m., Apr. 21, 1942, *Julian A. Steyermark 45853* (F, type; G, LL, UC, US, isotypes), shrub 20 ft. tall, leaves deep green above, paler green beneath, pedicels recurved, rose-colored. Peten: San Luis, km. 52 of road, in rain forest, July 10, 1959, *C. L. Lundell 16269A* (LL), arborescent shrub, 10 ft. high, inflorescence and flowers red; Dolores, on Rio Mopan trail, 4 km. east of village, in high forest, May 28, 1961, *Elias Contreras 2403* (LL), small tree, 10 ft. high, flowers carmine; Dolores, bordering Rio Ixcol, 1 km. east of village, in high forest, June 3, 1961, *Elias Contreras 2408* (LL), small tree, 2 in. diam., 10 ft. high, flowers reddish.

The leaves of *Contreras 2403* are obovate and superficially resemble those of *P. membranacea* Lundell, but the reddish indument of *P. oblanceolata* makes possible the immediate recognition of this taxon.

45. Parathesis vestita Lundell, Wrightia 3: 75. 1963. Fig. 44.

Shrub or tree, up to 10 m. high; branchlets rather stout, densely villous-tomentose with long red mostly simple hairs; leaves with petioles 5–15 mm. long; leaf blades oblanceolate, oblanceolate-elliptic or obovate-elliptic, 10–30 cm. long, 3 10 cm. wide, apex subabruptly acuminate, base acutish to acuminate, decurrent, membranaceous, conspicuously dentate with numerous small sharp regular teeth or sometimes bidentate with larger irregular teeth, persistently hirtellous on upper surface, long villous along midvein beneath, the lower surface rather thinly and persistently villous with mostly simple hairs or long stipitate with bifid or stellate tipped hairs, the terminal rays small and inconspicuous, the midvein prominent beneath, impressed above, the primary lateral veins slender on undersurface, plane to slightly impressed above; inflorescences axillary, long-pedunculate, pyramidal and lax, 10–25 cm. long, villous to short villous, dull red; pedicels slender, hirtellous-villous, 6–12 mm. long; flowers white, corymbose or racemose-corymbose, up to 7 mm. long at anthesis, papillose-tomentose; sepals lanceolate-triangular or triangular, 1.4–2 mm. long, acuminate or cuspidate, punctate; petals linear-lanceolate, 6–7 mm. long, papillose-tomentose on inner surface except at base, punctate in lines; stamens up to 3.5 mm. long; filaments stout, glabrous, 1.4–1.5 mm. long, punctate; anthers erect, dorsifixed about one-fourth above base, ovate or ovate-lanceolate, 2–2.5 mm. long, thick, obtusish, with grooved black-punctate dorsal area; ovary ovoid, short villous-tomentose almost to base; style slender, long, 5.5–6.5 mm. long, short villous basally; placenta subglobose, apiculate; ovules 6 or 7, erect, uniseriate, enclosed; fruits black at maturity, depressed-globose, drying 7–9 mm. in diam.

Fig. 44. *Parathesis vestita* Lundell. 1, Leaf, showing sharply dentate margin and upper surface; × ½. 2, Flowering branch; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, *Paul C. Standley 68219* (F); excepting leaf, from *Standley 86610* (F), by Vivien Frazier.

GUATEMALA.—Chimaltenango: Quisache, in a moist forested barranco, alt, 1800 m., Jan. 5–6, 1939, *Paul C. Standley 62298* (F, LL), shrub, 10 ft., fruit pale red or almost black. El Progreso: between Calera and summit of Volcan Siglo, alt. 2000–3300 m., Jan. 21, 1942, *Julian A. Steyermark 43025* (F), tree 30 ft. tall, leaves membranous, dull green above, pale green beneath, fruit red, globose, 9 mm. in diam. Quezaltenango: Volcan Zunil, in second-growth woodland, alt. 5600 ft., Aug. 7, 1934, *Alexander F. Skutch 898* (A), shrub, fls. white, pedicels and peduncles red, berries black at full maturity; near El Muro, below Santa Maria de Jesus, damp forest, alt. about 1200 m., March 1, 1939, *Paul C. Standley 67144* (F), inflorescence pendent, the branches reddish, flowers white; Los Positos, southwest of San Martin Chile Verde, damp dense forest, alt. about 1500 m., March 8, 1939, *Paul C. Standley 67943* (F, LL), tree 20 ft., flowers white; Chiquihuite, damp forest, alt. about 1410 m., March 8, 1939, *Paul C. Standley 68151* (F), tree 15–20 ft., flowers white; Finca Pirineos, below Santa Maria de Jesus, damp dense forest, alt. 1350 1380 m., March 11, 1939, *Paul C. Standley 68219* (F, type; LL, isotype), tree 25 ft., branches of inflorescence dull red, flowers white; same locality and date, *Paul C. Standley 68446* (F), shrub 20 ft., rachis dark reddish, flowers white; Finca Pirineos, along Quebrada San Geronimo, lower south-facing slopes of Volcan Santa Maria, between Santa Maria de Jesus and Calahuache, alt. 1300 2000 m., Jan. 1 2, 1940, *Julian A. Steyermark 33327* (F, LL), leaves membranous, dark green above, paler beneath, flowers white, pedicel and peduncle rose-purple, "*hueso blanco*"; along great barranco between Finca Pirineos and San Juan Patzulin, alt. 1300 1500 m., Jan. 6, 1940, *Julian A. Steyermark 33691* (F), small tree 25 ft. tall, "*huesito blanco*"; Los Nubes, south of San Martin Chile Verde, wooded barranco, alt. about 2250 m., Jan. 16, 1941, *Paul C. Standley 83628* (F), tree 5 m. tall; El Pocito, south of San Martin Chile Verde, on road to Colomba, densely forested damp white sand quebrada, alt. about 2200 m., Jan. 27, 1941, *Paul C. Standley 84964* (F, G), shrub 2 m., inflorescence pendent, fruit cherry-red; same locality and date, *Paul C. Standley 85041* (F, US), small common tree, flowers greenish-white; above Mujulia, between San Martin Chile Verde and Colomba, in damp dense mixed forest on white sand slopes, alt. about 1800 m., Feb. 1, 1941, *Paul C. Standley 85587* (F), shrub 3–4 m. tall, petals white, fruit red; along old road between Finca Pirineos and Patzulin, rocky wooded hillside, alt. 1200–1400 m., Feb. 9, 1941, *Paul C. Standley 86610* (F), small tree, flowers greenish-white, the rachis dull red; same locality and date, *Paul C. Standley 86658* (F, S), tree 4–6 m. tall, flowers white; same locality and date, *Paul C. Standley 87131* (F), shrub 2 m. tall, flowers white, pedicels purplish-red. San Marcos: Finca Vergel, near Rodeo, in wet forest, alt. about 900 m., March 15, 1939, *Paul C. Standley 68903* (F), *68944* (F, LL), *68965* (F, LL), tree 20 ft., flowers white; wet mountain forest near Aldea Fraternidad, between San Rafael Pie de la Cuesta and Palo Gordo, west facing slope of the Sierra Madre Mountains, alt. 1800–2400 m., Dec. 10–18, 1963, *Louis O. Williams, Antonio Molina R. & Terua P. Williams 25680* (F), *25691* (F), *26274* (F), shrub or tree, flowers pink, berries bright red. Sololá: Volcan Atitlan, south-facing slopes, alt. 1700–3800 m., June 11, 1942, *Julian A. Steyermark 47367* (F, US), tree. Suchitepequez: Volcan Santa Clara, between Finca El Naranjo and upper slopes, alt. 1250–2650 m., May 23, 1942, *Julian A. Steyermark 46629* (A, F, US), tree 25 ft. tall, peduncle brown-purple, pedicels rose, corolla white. Indefinite: without locality, Mujulia, Feb. 1878, *Carl Gustav Bernoulli & Rich. Cario 1980* (K).

Related to *P. pleurobotryosa* Donn. Sm., with which it has been confused, *P. vestita* is notably different in having coarse villous indument of mostly simple hairs, a villous-tomentose ovary with style short villous at base, and large thin leaves distinctively and conspicuously dentate, mostly with sharp small teeth. In *P. pleurobotryosa* the indument is denser and of conspicuously stellate stipitate hairs, the ovary is only short villous at apex with the style glabrous, and the margin of the small subchartaceous leaves is rather obscurely crenulate.

46. Parathesis Schultesii Lundell, Bot. Mus. Leaflets 9: 186. *pl.* 7. 1941. Plate 21.

Plate 21. *Parathesis Schultesii* Lundell. Leaf and pubescent fruit. Type, *R. E. Schultes & B. P. Reko 862* (MICH).

Shrub, branchlets slender, ferruginous-tomentose mostly with stellate sessile or short stipitate hairs; leaves with tomentose petioles up to 1 cm. long; leaf blades oblanceolate, 7–14 cm. long, 2–3.7 cm. wide, apex subacuminate, the acumen obtuse, base acute, membranaceous or subchartaceous, entire or obscurely crenulate, pilose above at first, the hairs rather sparse, pubescent beneath with red mostly stellate sessile or short stipitate hairs, densest along costa and lateral veins, the rays erect or spreading, the costa and primary lateral veins slightly impressed above, slender but rather conspicuous beneath; inflorescences axillary, few-flowered, paniculate, 1-branched, 2.5–6 cm. long, very slender, weak, densely ferruginous-pubescent with mostly stellate hairs; fruiting pedicels slender, 7–12 mm. long; sepals triangular, about 2 mm. long, acuminate, pubescent; fruits ovoid-globose, drying red and up to 8 mm. in diam., persistently and and densely pubescent over entire surface; the persistent style pubescent at base.

MEXICO.—Oaxaca: District of Choapam, Cerro Caracol, near San Juan Lalana, in forest, Lat. 17°26′, Long. 95°49′, alt. 1100 m., May 11, 1939, *Richard Evans Schultes & Blas Pablo Reko 862* (MICH, type; F, LL, isotypes), tall shrub.

Well-marked by its reduced inflorescences, obtusely acuminate oblanceolate leaves pilose on upper surface, and fruits persistently pubescent, the species is akin to *P. pleurobotryosa* Donn. Sm. and *P. vestita* Lundell of Guatemala. It is the only species of *Parathesis* known to have pubescent fruits.

47. Parathesis pleurobotryosa Donn. Sm., Bot. Gaz. 16: 195. 1891.
Fig. 45 and Plate 22.

Branchlets thick, densely villous with coarse ferruginous stellate stipitate hairs; leaves with marginate petioles 1–1.5 cm. long; leaf blades lanceolate or lanceolate-elliptic, 7–13.5 cm. long, 2.5–4.5 cm. wide, apex acuminate, base acutish and decurrent, rather obscurely crenulate, subchartaceous, at first sparsely hirtellous on upper surface, persistently pubescent on lower surface with red stipitate short-rayed stellate hairs, the costa villous and elevated beneath, nearly plane above, the primary lateral veins 12–15 on each side, rather conspicuous beneath, slightly impressed above; inflorescences axillary, villous-tomentose with coarse red hairs, the hairs of secondary branches shorter and less dense, panicles 1- or 2-branched, 5–15 cm. long, long-pedunculate; pedicels slender, 5–12 mm. long, villous-hirtellous; flowers umbellate, papillose-tomentose, about 5 mm. long at anthesis; sepals lanceolate-triangular, 1.2 1.8 mm. long, acuminate or cuspidate, punctate, papillose-hirtellous; petals lanceolate, 5.5–6.5 mm. long, punctate in lines, papillose-tomentose on inner surface along edges and above middle, glabrous below; stamens about 3 mm. long; filaments thick, glabrous, 1.2–1.4 mm. long; anthers ovate, 1.6–2 mm. long, thick, dorsifixed about one-third above base, apiculate, sparingly black-punctate dorsally, the area grooved and narrowly triangular, sometimes apically barbate dorsally, the basal lobes rounded; ovary ovoid, glabrous below, short villous-hirtellous apically; style slender, 4.5–6 mm. long, glabrous; placenta subglobose, apiculate; ovules 5–7, uniseriate, enclosed.

GUATEMALA.—Alta Verapaz: Tactic, 1400 m., 1882, *F. C. Lehmann 1426* (BM). Baja Verapaz: Santa Rosa, alt. 5000 pp., Sept. 1888, *H. von Tuerckheim 1442* (US, type); between Salama and Pusulha, June, 1904, *O. F. Cook 248* (US).

Fig. 45. *Parathesis pleurobotryosa* Donn. Sm. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type, *H. von Tuerckheim 1442* (US), by Vivien Frazier.

Plate 22. *Parathesis pleurobotryosa* Donn. Sm. Inflorescences and leaves, showing inconspicuous teeth of leaf margin. Type, *H. von Tuerckheim 1442* (US).

A distinctive, but rarely collected species, *P. pleurobotryosa* appears to be closely akin to *P. vestita* Lundell and *P. Schultesii* Lundell.

48. Parathesis Oerstediana Mez, Pflanzenreich IV. 236: 178. 1902. Fig. 46.

Tree, 7 m. high, branchlets rather stout, densely ferruginous-tomentose with multibranched hairs, giving the branchlets a persistent rusty appearance; leaves with slender petioles up to 2 cm. long; leaf blades obovate, 12–22 cm. long, 5–9 cm. wide, apex abruptly acuminate, the acumen obtusish, base cuneate, decurrent, membranaceous, entire, leaf buds and young leaves pubescent on both surfaces with small ferruginous stellate or multibranched hairs, glabrescent at maturity except along the costa, the costa and primary lateral veins slightly impressed above, elongated beneath; inflorescences axillary, pedunculate, multiflowered, paniculate, the panicles 2- or 3-branched, the branches slender and weak, short villous and puberulent, the hairs simple or branched; bractlets linear and persistent; pedicels 1.5–3 mm. long, slender; flowers subcorymbose, puberulent, the buds slender, up to 5 mm. long; sepals less than 1 mm. long, acute, punctate in lines, the glands orange-black; petals very slender, linear, 4–5.5 mm. long, punctate in lines, glabrous on inner surface except along margins and apically; stamens up to 4 mm. long; filaments slender, 2–2.5 mm. long; anthers linear, very slender, about 2 mm. long, dorsifixed one-third above base, base sometimes sagittate, apex minutely emarginate, concolorous dorsally or sometimes with several minute glands; ovary ovoid, glabrous; style glabrous, 3.5–4 mm. long; placenta subglobose, apiculate; ovules 7, minute, uniseriate, enclosed.

MEXICO.—Oaxaca: Distrito Choapam, Yaveo, trail to Arroyo Culebras, opening in coffee plantation, alt. 475 m., Mar. 16, 1938, *Ynes Mexia 9161* (F, UC, US), tree 7 m. high, smooth grayish bark, slender trunk, scarlet fruit. Veracruz: prope Tontalcingo, June, 1842, *F. M. Liebmann 10A* (C, lectotype; LL, isotype); "Teotalcingo," 1841–1843, *F. M. Liebmann 15349* (C, GH, LL, UC, probably type collection); Lacoba, June, 1842, *F. M. Liebmann 10* (BM, C, LL, UC, US); without locality, *F. M. Liebmann 15350* (C, LL); *15351* (C, LL).

P. Oerstediana is very distinctive in having linear petals glabrous on inner surface except along edges and apically, slender anthers, glabrous ovary and style, and persistent rusty tomentum of very small multibranched hairs.

49. Parathesis reflexa Brandeg., Univ. Calif. Publ. Bot. 6: 189. 1915.
Fig. 47 and Plate 23.

Shrub or small tree, branchlets rather stout, loosely ferruginous-tomentose with dendroid hairs; leaves with petioles 1–2.5 cm. long; leaf blades narrowly elliptic, lanceolate or oblanceolate, 10–23 cm. long, 3–7.5 cm. wide, apex subabruptly acuminate, base acuminate and decurrent, membranaceous to chartaceous, paler beneath, entire to crenulate, at first pubescent on upper surface at base and along petiole, at first floccose-tomentose beneath with dendroid ferruginous hairs, these sometimes somewhat appressed marginally, glabrescent except along the prominent midvein, the primary lateral veins slender, slightly impressed above; inflorescences axillary, the terminal leaves sometimes reduced and bract-like, 2- or 3-paniculate, long pedunculate, minutely floccose-tomentulose, with ferruginous dendroid hairs, pyramidal, 8–25 cm. long; pedicels slender, 5–12 mm. long; flowers 5- or rarely 6-merous, umbellate, minutely papillose-

Fig. 46. *Parathesis Oerstediana* Mez. 1, Flowering branch; × ½. 2, Pedicel, calyx and pistil; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from lectotype, *F. M. Liebmann 10A* (C), by Vivien Frazier.

Fig. 47. *Parathesis reflexa* Brandeg. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil, × 5. Illustrated from type, *C. A. Purpus 7334* (UC), by Vivien Frazier.

Plate 23. *Parathesis reflexa* Brandeg. Inflorescence with umbellate flowers, and undersurface of leaf showing floccose tomentum along midvein. Type, *C. A. Purpus 7334* (UC).

tomentulose, up to 5 mm. long at anthesis; sepals triangular, up to 1.5 mm. long, acuminate, densely punctate, papillose-puberulent; petals lanceolate, 5 mm. long, papillose-tomentose over entire inner surface, black-punctate in lines; stamens 2.75–3 mm. long; filaments glabrous, sometimes black-punctate, 1.5–2 mm. long; anthers erect, slender, lanceolate, about 2 mm. long, dorsifixed one-third above base, inconspicuously punctate dorsally with minute orange-black glands, these usually dispersed, occasionally in lobes; ovary ovoid, tomentose over entire surface to base, the hairs above and at base of style multibranched or simple; style about 4.5 mm. long; placenta subglobose, apiculate; ovules small, 8–10, uniseriate, enclosed; fruits subglobose, up to 1 cm. in diam. when ripe.

MEXICO.—Chiapas: near Chicharras, alt. 6000 ft., Feb. 12–15, 1896, *E. W. Nelson 3800* (GH, US); Barranca near Finca Irlanda, damp forests, June, 1914, *C. A. Purpus 7334* (UC, type; BM, F, GH, LL, MO, NY, US, isotypes); Boqueron, near Motozintla, in advanced forest, alt. 2540 m., May 3, 1945, *Eizi Matuda 5355* (LL), *15355* (F), a tree, 7–8 m. high; Carelas, near Motozintla, alt. 2176 m., April, 1945, *Eizi Matuda 5520* (LL), a shrub, 3–5 m. high; same locality and date, *Matuda 15520* (F), a tree, 6–7 m.

GUATEMALA.—Chimaltenango: San Martin, Oct. 9, 1938, *J. R. Johnston 1353* (F); above Las Calderas in damp forest, alt. 1800–2100 m., Dec. 15, 1938, *Paul C. Standley 60058* (F, LL), shrub or tree, 10–20 ft.; slopes of Volcan de Acatenango, above Las Calderas, in dense wet *Chiranthodendron* forest, alt. 2400–2700 m., Jan. 3, 1939, *Paul C. Standley 61972* (F), shrub, 15 ft., fruit edible, *"lichui"*; Matorrales del barranco cerca de San Bartolo, alt. 1700 m., May 18, 1963, *Antonio Molina R. & Albertina R. Molina 12435* (F), fls. rosadas, arbol 5 m. San Marcos: between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcan Tajumulco, alt. 1300–3000 m., March 1, 1940, *Julian A. Steyermark 37023* (F), shrub, 20–25 ft. tall, petals pink, rose or white. Santa Rosa: Zamorora, alt. 5500 pp., April, 1893, *Enrico Teophilo Heyde & Ernesto Lux 4535A* (F, GH, US).

P. reflexa is notable for its floccose indument consisting of sordid dendroid hairs.

50. Parathesis calophylla Donn. Sm., Bot. Gaz. 18: 205. 1893.
Fig. 48 and Plate 24.

Tree, up to 15 m. high; branchlets stout, densely and persistently ferruginous-tomentose, the hairs multibranched to base; leaves with rather stout to slender petioles up to 3.5 cm. long; leaf blades lanceolate or elliptic-lanceolate, up to 18 cm. long, 7 cm. wide, apex acuminate or subabruptly acuminate, base acute or acuminate, subcoriaceous, entire or obscurely crenulate, glabrous above except along midvein and petiole, shiny, persistently ferruginous-tomentose beneath with fine matted multibranched hairs, costa stout and elevated beneath, impressed above, the primary lateral veins slightly impressed above, the surface sometimes slightly bullate; inflorescences axillary, the terminal leaves usually reduced, ferruginous-tomentose with multibranched hairs, paniculate, 1- or 2-branched, 6–15 cm. long, multiflowered; pedicels 3–6 mm. long; flowers umbellate or subcorymbose, tomentose, 6–7 mm. long at anthesis; sepals triangular, 2–2.5 mm. long, acuminate, orange-punctate in lines; petals linear-lanceolate, up to 7 mm. long, papillose-tomentulose on outer surface and on inner surface except at base, punctate in lines; stamens 3.75–5.5 mm. long; filaments slender, 2.5–4 mm. long, glabrous, punctate; anthers narrowly lanceolate, 2–3 mm. long, apiculate, dorsifixed one-fourth above base, with several small glands dorsally

Fig. 48. *Parathesis calophylla* Donn. Sm. 1, Flowering branch; × ½. 2, Calyx; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from *Elias Contreras 5071* (LL), by Vivien Frazier.

Plate 24. *Parathesis calophylla* Donn. Sm. Inflorescence with umbellate flowers, and undersurface of leaf, ***Alexander F. Skutch 1159*** (A).

in a narrow area above point of attachment; ovary ovoid, glabrous at base, villous-tomentose above and at base of style; style punctate in lines, 5–6.5 mm. long, rather stout; placenta subglobose, small, apiculate, ovules 7 or 8, erect, uniseriate, tardily exposed apically; fruits depressed-globose, black and shiny when ripe, drying up to 9 mm. in diam.

MEXICO.—Chiapas: Saxchanal, Sierra Madre, in virgin forest, alt. 2700 m., July 1, 1941, *Eizi Matuda 4293* (A, F, LL, MEXU, MO, NY, US), tree, 15 m. high; Rodeo, near Siltepec, in virgin forest, alt. 2800 m., Aug. 1, 1941, *Eizi Matuda* 4555 (A, LL, NY), tree, 15 m. high.

GUATEMALA.—Huehuetenango: San Juan Atitan, in the forest, alt. 9100 ft., Sept. 8, 1934, *Alexander F. Skutch 1159* (A, BM, F, G, LL, NY, US), tree 40 ft. high, fls. white with a pink center, fruit black; Cerro Huitz, between Barillas and Mimanhuitz, Sierra de los Cuchumatanes, alt. 1600–2600 m., July 14, 1942, *Julian A. Steyermark 48551* (F), shrub 25 ft. tall, leaves ferruginous beneath, deep green above; between Quetzal and Barillas, Sierra de los Cuchumatanes, alt. 1600–2000 m., July 18, 1942, *Julian A. Steyermark 49126* (F, US), shrub 20 ft. tall, leaves dark green and shining above, ferruginous beneath and on stem, rachis, petioles and pedicels, petals white; wet cloud forest at Cruz de Limon, between San Mateo Ixtatan and Nuca, Sierra de los Cuchumatanes, alt. 2600–3000 m., July 31, 1942, *Julian A. Steyermark 49862* (F, US), tree 40 ft. tall, leaves beneath and peduncles and pedicels brownish, petals white; top of Cerro Chemalito, Sierra de los Cuchumatanes, west of Santa Eulalia, in forested ravine below alpine meadow, alt. 3100–3150 m., Aug. 2, 1942, *Julian A. Steyermark 49960* (F, G), tree 40 ft. tall, fruit black and shining, slightly sweet-acidulous; above Macx, between Todos Santos and San Martin, Sierra de los Cuchumatanes, damp mixed forest of *Quercus*, *Abies*, and *Pinus*, alt. 2500–3000 m., Sept. 6, 1942, *Julian A. Steyermark 51883* (F), tree 25 ft. tall, leaves buff-brown-silvery beneath, "*uva*," "*cinco negritos*." El Progreso: hills north of Finca Piamonte, between Finca Piamonte and summit of Volcan Santa Luisa, in cloud forest on summit, alt. 2400–3333 m., Feb. 5, 1942, *Julian A. Steyermark 43563* (F, LL, US), tree 20–30 ft. tall, leaves subcoriaceous, corolla white, filaments white, anthers golden-yellow, style white; between Finca Piamonte and top of Montaña Piamonte, along Joya Pacayal, alt. 2500–3000 m., Feb. 7, 1942, *Julian A. Steyermark 43689* (F, US), tree 30 ft. tall. Quiche: San Miguel Uspantan, alt. 6000 pp., Apr. 1892, *Enrico Teophilo Heyde & Ernesto Lux 2909* (US, type; G, GH, LL. MO, NY, US, isotypes); 1892, *Enrico Teophilo Heyde 304* (US); Nebaj, bordering high forest, ca. 8 km. west, alt. ca. 7500 ft., June 19, 1964, *Elias Contreras 5057* (LL), shrub, 3 in. diam., 15 ft. high; Nebaj, in high forest, ca. 9 km. sw., alt. ca. 7800 ft., June 20, 1964, *Elias Contreras 5071* (LL), arborescent shrub, 4 in. diam., 35 ft. high, fruit dark red; Nebaj, in high forest, ca. 8.5 km. sw., alt. ca. 7500 ft., June 22, 1964, *Elias Contreras 5095* (LL), shrub; Nebaj, in high forest, ca. 10 km. w., alt. 8000 ft., July 3, 1964, *Elias Contreras 5186* (LL), small tree, 4 in. diam., 20 ft. high, fls. white, "*xoc*"; in mossy cloud forest, El Boqueron, near Nebaj, 8000–8200 ft., June 25–Aug. 17, 1964, *George R. Proctor 25437* (LL), *25438* (LL), tree, 10 m., corolla light pink, almost white, ripe fr. black.

COSTA RICA.—El Tablazo, Apr. 28, 1946, *Jose Antonio Echeverria 358* (UC).

The slender filaments longer than the anthers, slender anthers sparingly punctate dorsally, persistent matted tomentum of undersurface of leaves, and dendroid hairs multibranched to base are features of *P. calophylla*, one of the outstanding species in the genus.

The Costa Rican collection is a very poor specimen with young buds and loose fruits. Although it appears referable here, the leaves are exceptionally large for this species.

51. Parathesis villosa Lundell, Wrightia 3: 76. 1963. Fig. 49 and Plate 25.

Shrub or small tree, branchlets rather slender, minutely tomentose with fine tan to reddish hairs, the indument sometimes appressed; leaves with slender

Fig. 49. *Parathesis villosa* Lundell. 1 and 2, Flowering branches; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, *Geo. B. Hinton 13721* (LL), by Vivien Frazier.

Plate 25. *Parathesis villosa* Lundell. Flowering branch. Type, *Geo. B. Hinton 13721* (LL).

petioles 7–12 mm. long; leaf blades elliptic, lanceolate or oblanceolate, 7–18 cm. long, 2.5–6 cm. wide, apex acuminate or subabruptly short acuminate, base acute to acuminate, decurrent, membranaceous, subentire or obscurely crenulate, at first papillose above especially along petiole, at first pubescent beneath with very fine long-rayed sessile stellate hairs, glabrescent, the costa elevated beneath, plane above, the primary lateral veins slender; inflorescences axillary, short villous and papillose-puberulent, 3–20 cm. long, the shorter ones apical, long-pedunculate, 1- or 2-branched; the leaves of floriferous branches usually reduced apically; pedicels 3–10 mm. long, short villous and papillose-puberulent; flowers usually 5-, rarely 4-merous, umbellate, papillose-tomentulose, up to 7 mm. long at anthesis; sepals ovate-lanceolate or triangular-ovate, apparently accrescent, 1.2–2.5 mm. long, acute or acuminate, conspicuously punctate; petals linear-lanceolate, 5–8 mm. long, inner surface papillose-tomentose, usually to base, conspicuously punctate in lines; stamens up to 3.8 mm. long; filaments thick, glabrous, 1–2 mm. long, punctate; anthers ovate-lanceolate, 2–2.5 mm. long, thick, apiculate, dorsifixed one-third above base, black-punctate dorsally, sometimes almost to apex; ovary ovoid, glabrous below, short villous apically, usually not densely so; style slender, villous at base, up to 6 mm. long, conspicuously punctate; placenta strongly depressed-globose; ovules 8–10, tardily exposed apically.

MEXICO.—Durango: Sianori, 1924, *Jesus Gonzalez Ortega 5369* (US). Guerrero: May 25, 1903, *E. W. Nelson 7053* (US); Dist. Mina, Puerto Rico, in oak forest, 1750 m., Apr. 15, 1939, *Geo. B. Hinton 14164* (GH, MICH, NY), tree 8 m. high, flowers pink, fruit purple black. Jalisco: Sierra Madre, San Sebastian, Arroyo del Triangulo, streamside, alt. 1425 m., Jan. 1, 1927, *Ynes Mexia 1325* (A, BM, F, G, GH, MICH, MO, NY, UC, US), shrub, spreading, 3–5 m., fl. said to be bright pink, fruit edible, said to be black when ripe, "*manzanita*"; northern slopes of Nevado de Colima, in pine-oak forest about 1 km. by lumber road above sawmill called Piedra Ancha, side of steep barranca, elev. about 2400 m., Apr. 2, 1949, *Rogers McVaugh 10159* (LL, MICH), treelike shrub 3 m. high, flowers pink; about 15 miles southeast of Autlan, barranca in pine-oak-fir forest, elev. 2400–2600 m., Apr. 12, 1949, *Rogers McVaugh 10253* (LL, MICH), abundant, small tree, up to 6–8 m. high, fruit bright red, flowers purplish-pink; mixed forest in mountains east of Mamantlan about 15 miles south-southeast of Autlan by way of Chante, elev. about 6700 ft., July 26, 1949, *R. L. and C. R. Wilbur 1862* (LL, MICH), common tree about 4 m. high, leaves very shiny green, pedicel pink, mature fruit red; Sierra de Manantlan, southeast of Autlan, sides of steep moist barranca, in pine forest zone, elev. ca. 1700 m., Nov. 7, 1952, *Rogers McVaugh 13995* (LL, MICH), treelike, 5 m. high; Sierra de Caule, southwest of Talpa de Allende, barrancas in fir zone, elev. 1800–2250 m., Nov. 19–21, 1952, *Rogers McVaugh 14285* (LL, MICH), shrub 1.5–3 m. high, fruit coral red. Mexico: Dist. Temascaltepec, Rincon, Jan. 22, 1932, *Geo. B. Hinton 184* (G, K); San Simon, barranca near water, alt. 2140 m., May 6, 1932, *Geo. B. Hinton 597* (BM, G, K), tree, corolla pink; Real de Arriba, alt. 1930 m., May 7, 1932, *Geo. B. Hinton 600* (BM, G, K), tree; Nanchititla, wet barranca, March 16, 1933, *Geo. B. Hinton 3611* (BM, F, MICH, US), 1.5 m. high; La Labor, barranca, alt. 2000 m., Apr. 1, 1933, *Geo. B. Hinton 3679* (A, BM, G), tree; Cajones, wet barranca, alt. 2480 m., June 23, 1933, *Geo. B. Hinton 4051* (A, BM, G), shrub, 7 m. high; Nanchititla, wet barranca, June 12, 1933, *Geo. B. Hinton 4110* (A, BM, MO), shrub, 3 m.; Berros, Dec. 30, 1934, *Geo. B. Hinton 7190* (GH, MO, US), shrub 4 m.; La Sierrita, May 12, 1935, *Geo. B. Hinton 7683* (A, BM, G), shrub. Michoacan: Dist. Zitacuaro, Zitacuaro-Silva, oak woods, alt. 2200 m., Apr. 9, 1938, *Geo. B. Hinton 11807* (F, GH, LL, MO, US), shrub 1 m. high (fls. abnormal); Dist. Coalcoman, Sierra Torricillas, in woods, alt. 1760 m., Apr. 18, 1939, *Geo. B. Hinton 13717* (GH, LL, TEX, US), tree 4 m., fl. pink; Dist. Coalcoman, Pto. Zarzamora, in woods, alt. 1600 m., Apr. 27, 1939, *Geo. B. Hinton 13721* (LL, type; F, GH, MO, US,

isotypes), shrub 4 m., fl. pink; Tancitaro, canyon 2 mi. east of Tancitaro, elev. 6000 ft., July 21, 1941, *Wm. C. Leavenworth & H. Hoogstraal 1068* (F, MO). SINALOA: without locality, collected in 1920 by the Comision Catastral y de estudios de los recursos naturales del estado, *964* (LL, US).

Usually the floriferous branchlets have reduced leaves apically so that the axillary inflorescences appear terminal. The villous indument of the inflorescences, leaves pubescent at first on lower surface with fine sessile stellate hairs, large sepals, and flowers with all parts conspicuously punctate, including filaments and style, together with the strongly depressed-globose placenta with 8–10 ovules are features of *P. villosa*.

Although it varies more than usual in size of flower parts, pubescence of apical internodes and in the degree of pubescence of the ovary apically, this should be expected when the range and diversity of habitat of the species is considered. The type of pubescence is typical in all specimens cited.

52. PARATHESIS CONZATTII (Blake) Lundell, Wrightia 3: 109. 1964. Fig. 50.

Ardisia Conzattii Blake, Contr. Gray Herb. n. ser. 53: 64. 1918.

Branchlets slender, at first minutely tomentose with closely appressed light brown hairs; leaves with canaliculate petioles 6 20 mm. long; leaf blades narrowly lanceolate or oblanceolate, widest at or near the middle, 10–16 cm. long, 2.7 -4.5 cm. wide, apex acuminate, base attenuate and decurrent on the petiole, membranaceous, finely crenulate, glabrous above, at first pubescent beneath with fine closely appressed stellate hairs, glabrescent, midvein shallowly sulcate above, prominent beneath, the primary lateral veins slender; inflorescences axillary, large, tripinnately paniculate, 12–24 cm. long, with long peduncles and slender branches, short villous and papillose-puberulent, glabrescent; pedicels slender, 9–12 mm. long, short villous and papillose-puberulent; flowers corymbose, densely papillose-puberulent, black-punctate, up to 6.5 mm. long at anthesis; sepals narrowly triangular, acuminate, 1.6–2 mm. long; petals 6.5 mm. long, glabrous at base within, otherwise papillose-tomentose, black-lineate; stamens up to 2.8 mm. long; filaments stout, up to 1.3 mm. long, black-lineate; anthers ovate, about 2 mm. long, black-punctate dorsally, dorsifixed one-third above base; pistil glabrous; style 4.5–5.2 mm. long, black-punctate; placenta depressed-globose; ovules 8.

MEXICO. OAXACA: Dto. Meahuatlan, Los Naranjos, Cercanias de San Pedro el Alto, alt. 2200 m., May 16, 1917, *Cassiano Conzatti & Blas Pablo Reko 3285* (GH, type).

53. PARATHESIS STENOPHYLLA Lundell, Wrightia 3: 86, *fig. 53*. 1963. Fig. 51.

Branchlets rather slender, ferruginous-tomentose with fine closely appressed stellate hairs, the rusty tomentum persistent; leaves with petioles up to 2 cm. long; leaf blades linear-lanceolate, 10–30 cm. long, 2.5–5 cm. wide, apex acuminate, base acuminate and decurrent, chartaceous, crenulate-denticulate, at first ferruginous-pubescent on lower surface with closely appressed fine stellate hairs, glabrescent, papillose above at base and along petiole, the costa prominent beneath, plane above, the primary lateral veins slender; inflorescences axillary, with the apical leaves reduced, long-pedunculate, lax and few-flowered, 1- or 2-branched, up to 23 cm. long, finely tomentulose with rufous stellate hairs;

Fig. 50. *Parathesis Conzattii* (Blake) Lundell. 1 and 2, Flowering branches; × ½. 3, Calyx, spread out; × 5. 4, Petal and stamen; × 5. 5, Pistil; × 5. Illustrated from type, ***Cassiano Conzatti & Blas Pablo Reko 3285*** (GH), by Vivien Frazier.

Fig. 51. *Parathesis stenophylla* Lundell. 1, Flowering branches and leaf; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type, *Jose Ignacio Aguilar 793* (F), by Vivien Frazier.

pedicels 4–8 mm. long; flowers corymbose, 5 mm. long at anthesis, finely tomentulose; sepals about 1.5 mm. long, acuminate, black-punctate; petals linear-lanceolate, 5–6 mm. long, black-punctate in lines, papillose-tomentose on inner surface except for area above base; stamens 3–3.4 mm. long; filaments glabrous, up to 2 mm. long, punctate; anthers erect, ovate-lanceolate, up to 2.7 mm. long, dorsifixed one-third above base, black-punctate dorsally, the glands extending into lobes; ovary ovoid, black-punctate, glabrous below, short villous-pubescent apically and at base of style, glabrescent; style about 5 mm. long; placenta obovoid, acicular-apiculate; ovules 8, obovoid or ellipsoid, uniseriate, enclosed.

GUATEMALA.—Quiche: 1942, *Jose Ignacio Aguilar 793* (F, type).

This species is unlike any other in its narrow crenulate-denticulate leaves up to a foot in length. The material is inadequate, but the persistent closely appressed fine rusty stellate indument of branchlets, ovary short villous apically and at base of style, and the long lax remotely branched axillary inflorescences appear to distinguish it.

54. Parathesis venezuelana Mez, Pflanzenreich IV. 236: 179. 1902. Fig. 52.

Tree, branchlets rather stout, minutely ferruginous-tomentulose apically with closely appressed indument, glabrescent; leaves with slender petioles 1–2.5 cm. long; leaf blades elliptic, oblanceolate-oblong or obovate-elliptic, up to 20 cm. long, 9 cm. wide, apex subabruptly acuminate, base acute or subacuminate, submembranaceous, entire or irregularly sinuate, at first sparingly pubescent on lower surface with small closely appressed stellate hairs, glabrescent, costa elevated and prominent beneath, nearly plane above, primary lateral veins slender, numerous, ascending almost at right angles; inflorescences axillary, multiflowered, large, lax, long pedunculate, broadly paniculate, the panicles 10–20 cm. long, 2- or 3-branched, minutely puberulent; pedicels slender, 8–15 mm. long, minutely puberulent; flowers subcorymbose, puberulent-tomentulose, 6–7 mm. long at anthesis; sepals 1–1.4 mm. long, acuminate, black-punctate; petals lanceolate, up to 7 mm. long, papillose-tomentose on inner surface to base, sometimes rather sparsely at base and appearing glabrous, black-punctate in lines; stamens 3–4 mm. long; filaments up to 2 mm. long, rather stout, glabrous, punctate; anthers ovate-lanceolate, up to 2.5 mm. long, apex acuminate, with conspicuous black-punctate dorsal area, the glands extending to base of lobes, dorsifixed about one-third above base; ovary ovoid, ridged, tapering into style, puberulent-tomentulose almost to base, short villous-tomentose apically and at base of style; style up to 5.5 mm. long, with a few hairs to middle; placenta depressed-globose, minutely apiculate; ovules 8, small, uniseriate, enclosed; fruit depressed-globose, black, shining, up to 1 cm. in diam. when ripe.

COLOMBIA.—Indefinite: without locality or date, *Jose Celestino Mutis 180* (US), *3445* (US), *4972* (US); Mountain of Ocaña, June, 1845, *Wm. Purdie s.n.* (GH, K); Dept. Norte de Santander, Loso and vicinity (north of Toledo), woods along stream, alt. 2200–2400 m., Mar. 6–7, 1927, *E. P. Killip & Albert C. Smith 20421* (A, GH, NY, US), tree 15–20 ft., with drooping branches, calyx tube white, corolla rich pink.

VENEZUELA.—Merida: hautes Andes de Truxillo et de Merida, alt. 14,000–14,500 pieds., 1842, *J. J. Linden 282* (K, lectotype; BM, F, G, LL, P, isotypes); along Rio Albarregas, Monte Serpa, 5–10 kilometers northeast of Merida, alt. 1675–2135 m., Apr. 18, 1944, *Julian A.*

Fig. 52. *Parathesis venezuelana* Mez. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from lectotype, *J. Linden 282* (K), by Vivien Frazier.

Steyermark 55950 (F, NY), tree 40 feet tall, leaves deep green above, with sulcate transverse nerves, dull green below, flowers drooping, petals recurved, rose, anthers pale yellow, filaments pale green, calyx pale green, pedicel greenish white; above Canagua, along Rio Canagua between Rio Arriba and hacienda of Vicente Garcia, alt. 1615–1925 m., May 7, 1944, *Julian A. Steyermark 56361* (F), tree 30 ft. tall, fruit depressed-globose, black, shining, previously wine-red; entre Los Granates y El Carrizal, climax de selva nublada, June 22, 1954, *A. L. Bernardi 1269* (VEN), arbolito, 5 m. de alto, 10 cm. de diam., de flores rosadas, "*manteco*." INDEFINITE: Prov. Truxillo, 1846, *N. Funck & L. J. Schlim 801* (G).

Although *Killip & Smith 20421* is in flower bud, the anthers are conspicuously black-punctate to base of lobes and the connective at apex is prolonged. Also, in this collection the ovary is short villous-tomentulose at apex and at base of style.

P. venezuelana is well-marked by its ovate-lanceolate conspicuously black-punctate acuminate anthers, minute indument, ovary puberulent-tomentulose, and large tripinnate panicles. The sepals are scarcely 1 mm. long in some collections, notably in those of Mutis from Colombia.

55. PARATHESIS VULGATA Lundell, Wrightia 3: 88. 1963. Fig. 53 and Plate 26.

Shrub or small tree up to 8 m. high, branchlets rather stout, closely appressed tomentose with fine sessile stellate hairs; leaves with petioles mostly less than 1 cm. long, sometimes up to 1.5 cm. long; leaf blades oblanceolate, oblanceolate-elliptic or oblong, 7–19 cm. long, 3–6.5 cm. wide, apex subabruptly acuminate, base acuminate and decurrent, membranaceous, subentire or crenulate, at first pubescent on lower surface with fine closely appressed stellate hairs, glabrescent early, appearing glabrous, densely black-punctate, costa nearly plane above, elevated beneath, the primary lateral veins slender; inflorescences axillary, long pedunculate, paniculate, the panicles 1- or 2-branched, 6–18 cm. long, minutely papillose-puberulent with some longer hairs intermixed; pedicels usually 5–8, rarely 10 mm. long; flowers corymbose or subumbellate, densely papillose-puberulent, 5–6 mm. long at anthesis; sepals ovate-triangular, 1.4–2 mm. long, acuminate, red-black punctate; petals narrowly lanceolate, 5–7 mm. long, punctate with red-black lines, papillose-tomentose on inner surface along edges and above middle, with a papillose ring at base; stamens 3–3.5 mm. long; filaments stout, up to 1.5 mm. long, punctate; anthers thick, ovate-lanceolate, 2–2.5 mm. long, apiculate, with conspicuous black-punctate area dorsally, the glands often extending almost to apex, dorsifixed one-third above base; ovary ovoid, short villous apically to villous-tomentose, short villous at base of style; style 5–7 mm. long, punctate in lines; placenta subglobose, apiculate; ovules 6–9, erect, uniseriate, enclosed; fruits red, depressed-globose, about 1 cm. in diam. when ripe.

GUATEMALA:—BAJA VERAPAZ: mountain side north of divide north of Santa Rosa, alt. about 1650 m., Mar. 30, 1939, *Paul C. Standley 69897* (F), tree 15 ft., flowers greenish-white. CHIMALTENANGO: in deep barranco west of Patzun, alt. 2100 m., Jan. 26, 1947, *Louis O. Williams & Antonio Molina R. 11849* (F), shrub, 3 m. CHIQUIMULA: upper slopes of Montaña Tajuran, in vicinity of El Barriol, alt. 1200–1700 m., Oct. 28, 1939, *Julian A. Steyermark 30793* (F), tree 20–30 ft. tall, common in cloud forest; middle slopes of Montaña Norte to El Jutal, on Cerro Brujo southeast of Concepcion de las Minas, mixed forest below cloud forest, alt. 1700–2000 m., Nov. 2, 1939, *Julian A. Steyermark 31073* (F), berries edible, reddish wine color, "*sirasil de montaña*"; Volcan Quezaltepeque, 3–4 miles northeast of Quezaltepeque,

Fig. 53. *Parathesis vulgata* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from isotype, *S. F. Glassman 1616* (NY), by Vivien Frazier.

Plate 26. *Parathesis vulgata* Lundell. Inflorescence and undersurface of leaf. Isotype, *S. F. Glassman 1616* (NY).

cloud forest on top, alt. 1500–2000 m., Nov. 8, 1939, *Julian A. Steyermark 31484* (F, US), shrub 20 ft. tall, fruit wine red. JALAPA: between Miramundo and summit of Montaña Miramundo, between Jalapa and Mataquescuintla, 6 miles south of Miramundo, cloud forest at Soledad, alt. 2000–2500 m., Dec. 5, 1939, *Julian A. Steyermark 32651* (F), shrub 15 ft. tall, "*mora pava.*" JUTIAPA: Volcan Suchitan, northwest of Asuncion Mita, cloud forest, alt. 600–2050 m., Nov. 18, 1939, *Julian A. Steyermark 31961* (F), shrub 8–10 ft. tall, berries red. ZACAPA: forested slopes, near summit of Sierra de las Minas, near Finca Alejandria, alt. 2000 m., Oct. 12, 1939, *Julian A. Steyermark 29800* (F), shrub, fruits salmon.

HONDURAS.—COMAYAGUA: 6 km. north of Siguatepeque, top of hill. alt. 1300 m., Aug. 4, 1936, *T. G. Yuncker, R. F. Dawson & H. R. Youse 6314* (F, G, GH, MICH, MO, S, US), small tree, 12–15 ft. tall, 2–3 in. diam.; Cordillera Montecillos, bosque pino-liquidambar, alt. 1500 m., May 25, 1956, *Antonio Molina R. 7228* (F), fls. rosadas, arbusto 4 m. EL PARAISO: Güinope, alt. 1430 m., Dec. 1943, *Juvenal Valerio Rodriguez 1789* (F). INTEBUCA: region entre las Pilas y camino Yamaranguila, bosque pino-roble, alt. 1800 m., Apr. 6, 1956, *Antonio Molina R. 6268* (F), fls. rosadas, arbusto 1–2 m.; Quebrada del Pelon de Guise, alt. 1600 m., Apr. 9, 1956, *Antonio Molina R. 6395* (F), fls. rosadas, arbol 3–5 m.; bosque denso de Montaña Opalaca, 8 kms. de La Esperanza, alt. 2000 m., Apr. 7, 1957, *Antonio Molina R. 7880* (F), fls. rosadas, arbol 4–5 m., frecuente. MORAZAN: Mt. Uyuca, alt. 1238 m., Sept. 9, 1943, *Juvenal Valerio Rodriguez 774* (F); Mt. Uyuca, cloud forest, alt. 1700–2000 m., 1946–1947, *Louis O. Williams & Antonio Molina R. 10012* (F), *10377* (F), *10384* (F, GH, US), *11084* (A, F, MICH, MO), *11085* (F), *12086* (F, GH), *12144* (MICH, MO), *12618* (F, GH, MO, UC, US); Mt. Uyuca, drainage of the Rio Yeguare, about Long. 87° W, Lat. 14° N, cloud forest, alt. 6300 ft., June 16, 1948, *S. F. Glassman 1616* (F, type; NY, isotype), small tree, flowers pink; San Juancito, cloud forest area in mountains southwest, alt. 2000 m., May 21, 1947, *Louis O. Williams & Antonio Molina R. 12748* (BM, F, GH), *12776* (F, GH), shrub 3–4 m., fls. pinkish; *E. D. Merrill, Louis O. Williams & Antonio Molina R. 15649* (F); Mt. Uyuca, *Antonio Molina R. 202* (F, GH, US), *Paul C. Standley, Louis O. Williams & Antonio Molina R. 8016* (F); San Juancito, cloud forest, alt. 6000 ft., June 19, 1948 *S. F. Glassman 1686* (F), small tree, fls. pink; Cerro de Uyuca, La Labranza and vicinity, along trail to summit, 1600–1800 m., July 2, 1949, *Paul C. Standley 20697* (F), *28273* (F); Cordillera de Misoco o Volcan de Guiamaca, cloud forest, alt. 2500 m., June 15, 1950, *Antonio Molina R. 3160* (BM, F, GH, US), tree 6 m., common; Montana La Tigra, San Juancito mountains, about 15 km. ne. of Tegucigalpa, cloud forest, alt. 2000–2200 m., Dec. 30, 1962, *Louis O. Williams, Antonio Molina R. & Terua P. Williams 23275* (F, G, LL), tree 6–7 m., diam. 15 cm., fruits red. SANTA BARBARA: forested ridge south side of Montaña Santa Barbara, alt. 2350 m., Apr. 7, 1951, *Paul H. Allen, Robert Armour & Alphonse Chable 6122* (F), shrub 6 ft., fls. pale pink.

NICARAGUA.—MATAGALPA: cloud forest area near "Jinotega Rock Quarry," 5 km. north of Sta. Maria de Ostuma, Cordillera Central de Nicaragua between Matagalpa and Jinotega, alt. 1500 m., Jan. 8–15, 1963, *Louis O. Williams, Antonio Molina R. & Terua P. Williams 23377* (F, G, LL), tree 10 m. tall.

P. vulgata is a common species with no outstanding characteristics.

56. PARATHESIS MACRANTHA Lundell, Contr. Univ. Mich. Herb. 7: 42. 1942. Fig. 54.

Shrub, branchlets rather stout, at first minutely tomentulose with scarcely discernible closely appressed mostly stellate indument, the terminal leaf buds minutely appressed tomentose; leaves with petioles up to 1.7 cm. long; leaf blades elliptic or oblanceolate-elliptic, 6–12 cm. long, 2.6–5 cm. wide, apex subabruptly acuminate, base acute or acuminate, decurrent, subentire, costa and veins slightly impressed above, slender but conspicuous beneath, at first minutely and sparsely stellate-lepidote on lower surface, glabrescent; inflorescences axillary, paniculate, the panicles 1- or 2-branched, up to 12 cm. long,

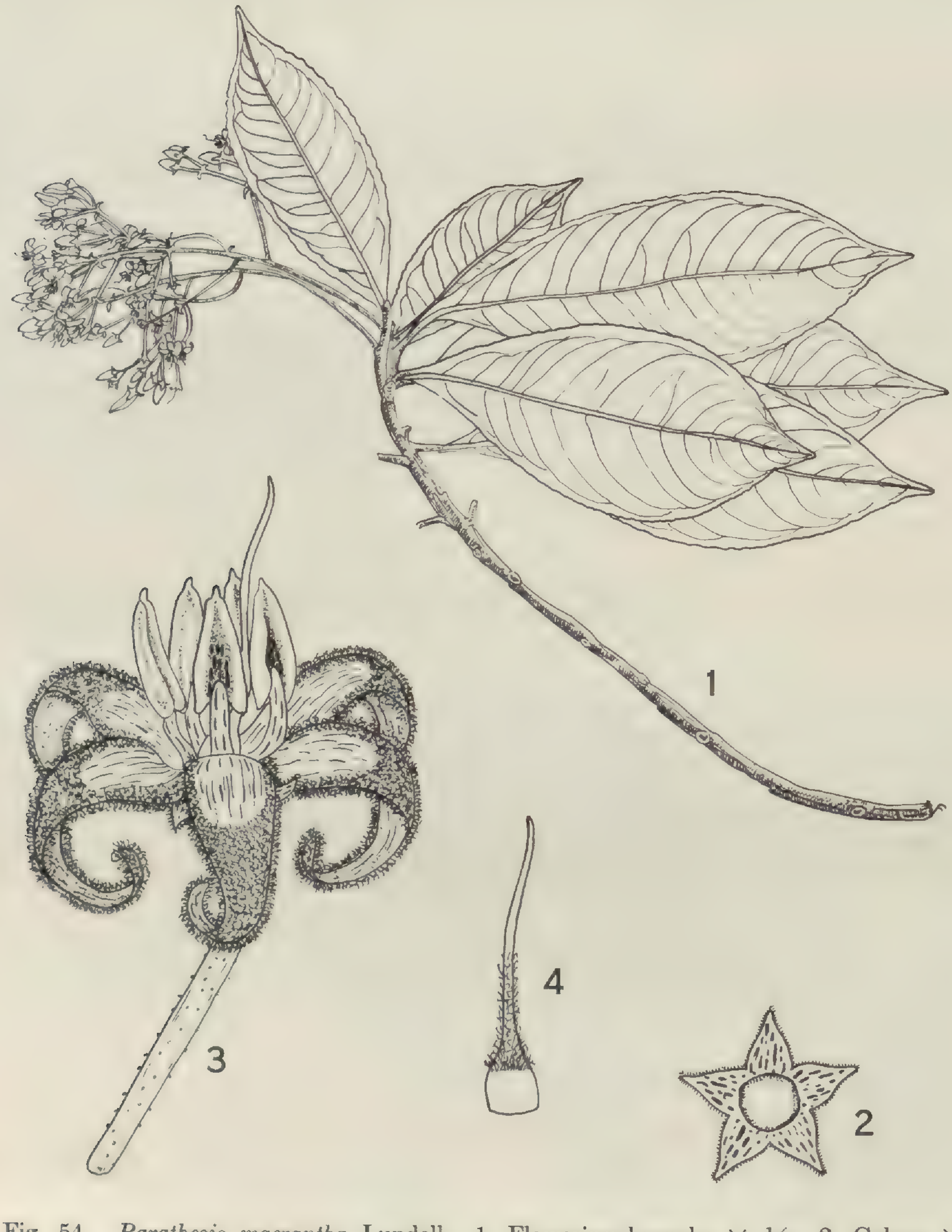


Fig. 54. *Parathesis macrantha* Lundell. 1, Flowering branch; × ½. 2, Calyx; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *Austin Smith A253* (MICH), by Vivien Frazier.

with long peduncles and slender secondary branches, minutely and sparsely puberulent, punctate; bractlets lanceolate, up to 3 mm. long, persistent; pedicels minutely puberulent, 7–13 mm. long; flowers umbellate or subcorymbose, puberulent, up to 8 mm. long at anthesis; sepals triangular, punctate, 1.5–2 mm. long, acute; petals linear-lanceolate, up to 9 mm. long, punctate in red-black lines, densely papillose-puberulent on outer surface, papillose-tomentose on inner surface except at base; stamens 4–4.5 mm. long; filaments thick, black-punctate, up to 2 mm. long; anthers ovate-lanceolate, up to 3.5 mm. long, apiculate, conspicuously black-punctate dorsally almost to apex, dorsifixed about one-fourth above base; ovary minutely villous-tomentulose apically and at base of style, the hairs on style longer; style about 5.5 mm. long, black-punctate in lines; placenta obovoid, apiculate; ovules 7–9, uniseriate, enclosed.

COSTA RICA.—ALAJUELA: region of Zarcero, Palmira, in cloud forest, alt. 6000 ft., Aug 30, 1937, *Austin Smith A253* (MICH, type; A, F, LL, MO, isotypes), shrub 12 ft., panicles, pedicels and calyx deep crimson, corolla pink, anthers golden brown, style white; Canton Alfaro Ruiz, La Peña de Zarcero, in cloud forest, alt. 1450 m., May 6, 1938, *Austin Smith H500* (F), shrub 4 m. high, leaves very glabrous, inflorescences mahogany red, flowers pink.

P. macrantha is closely akin to *P. glabra* Donn. Sm., but may be recognized by its ovary which is minutely villous-tomentose apically and at base of style, and by its larger flowers with stamens up to 4.5 mm. long, and petals up to 9 mm. long. Both *P. macrantha* and *P. glabra* have similar indument of branchlets and young leaves, as well as leaves black-punctate mostly in sharp irregular lines.

57. PARATHESIS GLABRA Donn. Sm., Bot. Gaz. 31: 115. 1901; Mez, Pflanzenreich IV. 236: 177, *fig. 30*. 1902. Fig. 55.

P. Storkii Standl., Field Mus. Pub. Bot. 8: 31. 1930.

Shrub or slender tree up to 15 m. high, branchlets rather stout, apically tomentose with minute very closely appressed stellate hairs; leaves with petioles up to 1.8 cm. long; leaf blades elliptic, oblong-elliptic or oblanceolate-elliptic, usually small, 8–15 cm. long, 3.5–7 cm. wide, apex subabruptly acuminate, base acute or acuminate and decurrent, subchartaceous, entire or obscurely crenulate, black-punctate, striolate, minutely appressed stellate-lepidote beneath at first and along petiole, glabrescent early, costa nearly plane above, elevated beneath, the primary lateral veins very slender; inflorescences axillary, rarely terminal (*White 156*, MO), paniculate, 5–18 cm. long, usually shorter than leaves, slender pedunculate usually to middle or above, 1- or 2-branched, sparsely and minutely puberulent at first, glabrescent early; pedicels slender, up to 1 cm. long; flowers subumbellate to corymbose, up to 7 mm. long at anthesis, the corolla very minutely papillose-puberulent; sepals minutely puberulent, densest apically, lanceolate-triangular, up to 2 mm. long, acuminate, densely red-black punctate; petals linear-lanceolate, about 7 mm. long, papillose-tomentose on inner surface except at base, densely black-punctate in lines; stamens 3–4 mm. long; filaments thick, black-punctate, up to 2 mm. long; anthers ovate-lanceolate, up to 2.75 mm. long, dorsifixed about one-fourth above base, tapering to the acute apex, conspicuously black-punctate dorsally, the glands extending down into lobes; ovary ovoid, glabrous or sparsely short villous apically and at base of style;

Fig. 55. *Parathesis glabra* Donn. Sm. 1, Flowering branch; × ½. 2, Calyx; × 5. 3, Pedicel, calyx and pistil; × 5. 4, Petals and stamens; × 5. 5, Pistil; × 5. Illustrated from *R. L. Rodriguez C. 489* (UC), by Vivien Frazier.

style 4.5–6 mm. long, black-punctate in lines; placenta obovoid, apiculate; ovules 7–9, uniseriate, enclosed; fruits depressed-globose, drying about 8 mm. in diam.

COSTA RICA.—Alajuela: Laguna, Canton of Alfaro Ruiz, alt. 7000 ft., Apr. 17, 1937, *Austin Smith 4131* (F), tree, 20 ft. high, cambium deep ox blood red, ripe fruit black; Palmira, alt. 1975 m., May 27, 1938, *Austin Smith NY682* (A, F, NY), tree 7 m., bark light brown, scabby; La Peña, cloud forest, alt. 1300 m., Dec. 26, 1939, *Austin Smith P2179* (A, US), shrub, 4 m.; Palmira, alt. 2300 m., Apr. 18, 1940, *Austin Smith P2633* (F, LL), tree 6 m., cambium layer pale pink. Cartago: Copey, in forest, alt. 1800 m., Feb. 1898, *Adolfo Tonduz 11714* (US, type; BM, LL, NY, isotypes); Santa Clara de Cartago, edge of forest, alt. 1950 m., July 20, 1923, *William R. Maxon & Alfred D. Harvey 8144* (US), 3–4 m. high, fl. pink; Cerro de La Carpintera, wet forest, alt. 1500–1850 m., Feb. 1924, *Paul C. Standley 35725* (US), tree 15–20 ft., fruit red and black, eaten; near Camp Empalme, along Pan American Highway, cloud forest, alt. 7300 ft., Feb. 16, 1943, *Elbert L. Little, Jr. 6027* (F, US), small tree, fls. pale pink, berry red; Cerros de La Carpintera, June 20, 1957, *R. L. Rodriguez C. 489* (UC), tree ca. 6 m., leaves glossy, pedicels and buds red, corolla pink, stamens yellow. San Jose: between Aserri and Tarbaca, moist forest, alt. 1600–1900 m., Feb. 12, 1924, *Paul C. Standley 34144* (US), shrub 10 ft., fruit dark red; vicinity of Santa Maria de Dota, oak forest, alt. 1500–1800 m., Dec. 14–26, 1925, *Paul C. Standley 41671* (US), *41869* (US), *42385* (US), shrub 8–12 ft., fruit red and purple; northeast of El Copey, in dense oak and bamboo forest near Laguna de la Escuadra, alt. 2000–2200 m., Dec. 16, 1925, *Paul C. Standley 42063* (US), shrub 10 ft., fruit red; Finca Guayabillos, wooded banks of quebrada north of farmhouse, alt. 2250–2275 m., July 7, 1936, *C. W. Dodge & V. F. Goerger s.n.* (F, LL, MO, US), shrub, corolla deep rose-pink striped. Indefinite: Hacienda Mora, San Cristobal, 1910, *Carlos Werckle s.n.* (US), small tree; Santa Maria, alt. 5500 ft., May 7, 1928, *H. E. Stork 2422* (LL, MICH); San Cristobal Road, alt. 6000 ft., June 14, 1928, *H. E. Stork 2560* (F, type of *P. Storkii*; fragment, G), small tree, full-fruited with red drupes; roads above San Isidro de Coronado, alt. 1400–1600 m., Dec. 1, 1937–Jan. 1, 1938, *Paul H. Allen 550* (A, F, MO), slender tree, 15 m., fruit dull red.

PANAMA.—Chiriqui: Boquete District, Bajo Charro, rain forest, alt. 6000 ft., Mar. 4, 1938, *M. E. Davidson 379* (A, F, MO, US), shrub or vine; R. Chiriqui Viejo valley, Apr. 3, 1938, *Gene White 58* (GH, LL, MO), tree, 7–8 ft. tall; Boquete District, Volcan de Chiriqui, alt. 7000 ft., July 12, 1938, *M. E. Davidson 907* (A, F, MO, US), tree 15–25 ft., fls. pink; R. Chiriqui Viejo valley, near river on island, July 13, 1938, *Peggy White 156* (LL, MO), tree 30–35 ft. tall, fls. pink; vicinity of "New Switzerland," central valley of Rio Chiriqui Viejo, alt. 1800–2000 m., Jan. 6–24, 1939, *Paul H. Allen 1352* (GH, LL, MO, NY, US), tree 10 m., fls. rose pink; Volcan de Chiriqui, Potrero Muleto to summit, alt. 3500–4000 m., July 13–15, 1940, *R. E. Woodson, Jr. & R. W. Schery 384* (GH, LL, MO), tree 8 m., fls. pink.

P. *Storkii* Standl. has the base of style and ovary short pilose apically, but similar hairs occur sparsely in the type of *P. glabra*, and there is no basis for recognition of the species. Among the distinctive characteristics of *P. glabra* are its elliptic chartaceous leaves, long slender peduncles, minute stellate indument of terminal internodes and lower surface of young leaves, and conspicuously black-punctate flowers.

58. Parathesis aurantiaca Lundell, Wrightia 3: 79, *fig. 49*. 1963. Fig. 56.

Shrub, or tree up to 7 m. high, branchlets closely appressed tomentose with very fine hairs, glabrescent; leaves with petioles 1–2.5 cm. long; leaf blades lanceolate, lanceolate-elliptic or oblanceolate, 7–20 cm. long, 2.5–6 cm. wide, membranaceous, crenulate-serrulate, apex slightly contracted and acuminate, base acuminate, decurrent, at first pubescent beneath with fine small pale

Fig. 56. *Parathesis aurantiaca* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal; × 5. 4, Stamen, dorsal view; × 5. 5, Pistil; × 5. Illustrated from type, ***Paul H. Allen & Mario Lewy van Severen 7310*** **(LL), by Vivien Frazier.**

appressed stellate hairs, glabrescent early, pellucid-punctate, midvein slender, elevated beneath, nearly plane above, primary lateral veins slender; inflorescences axillary, long-pedunculate, 5–17 cm. long, lax, 1- or 2-branched, minutely tomentulose with appressed hairs; pedicels slender, 7–11 mm. long, puberulent; flowers umbellate or subcorymbose, 5- or 6-parted, orange-punctate, up to 7 mm. long at anthesis, the calyx puberulent, corolla minutely tomentulose; sepals up to 1.5 mm. long, obtusish; petals linear-lanceolate, up to 8 mm. long, orange-punctate in lines, papillose-tomentose within except at base, with ring of minute glands at base; stamens 3–4 mm. long; filaments stout, glabrous, 1.5–2 mm. long, eglandular; anthers erect, dorsifixed two-fifths above base, ovate-lanceolate, 2.2–2.7 mm. long, sometimes with a few short red hairs dorsally at apex, grooved and rather sparingly orange-punctate dorsally, the glands extending into lobes; ovary ovoid, glabrous except for a few scattered hairs apically and at base of style; style 5–6 mm. long; placenta subglobose, apiculate; ovules 7–10, ellipsoid, exposed apically, uniseriate.

EL SALVADOR.—Chalatenango: cloud forest, east slope of Los Esesmiles, alt. ca. 2430 m., Mar. 15, 1942, *John M. Tucker 1058* (C, G, LL, NY, UC, US), shrub ca. 2.5 m. tall, corolla white, tinged with pink, red within at base; Los Esesmiles, highland area east of La Palma, fairly common at about 7500 ft. in association with *Rapanea* in pine forest, May 6–7, 1959, *Paul H. Allen & Mario Lewy van Severen 7310* (LL, type; F, NY, isotypes), tree, to about 20 ft.; flowers pink.

A cloud forest endemic known only from the type locality, *P. aurantiaca* is notable for having all parts orange-punctate, never black-punctate. The flowers are 5- or 6-parted.

59. Parathesis tartarea Lundell, Wrightia 3: 86, *fig. 54*. 1963. Fig. 57.

Tree, up to 16 m. high, branchlets thick, scaly, with epidermis peeling transversely and irregularly, the terminal buds and apical internodes densely ferruginous-tomentose with minute appressed sessile stellate hairs; leaves with rather stout marginate petioles 2–5 cm. long; leaf blades lanceolate to oblong-elliptic, 10–20 cm. long, 2.5–7 cm. wide, apex acuminate or subabruptly acuminate, base rounded and acutish or acute, coriaceous, paler beneath, denticulate, the teeth usually conspicuous but small, rarely obscure, glabrescent above, persistently and minutely pubescent on lower surface with very fine small closely appressed stellate hairs, the midvein prominent beneath, slightly impressed above, the primary lateral veins very slender; inflorescences axillary, paniculate, 5–15 cm. long, 1- or 2-branched, the peduncle and branches thick and angled, minutely ferruginous-tomentose with minute appressed hairs; pedicels rather stout, drying wrinkled, 5–10 mm. long; flowers corymbose, minutely ferruginous-tomentose, 5–6 mm. long at anthesis; sepals thick, triangular, 1.2–1.6 mm. long, acute, inconspicuously and sparsely orange-punctate; petals thick, linear-lanceolate, about 6 mm. long, papillose-tomentose over entire inner surface, inconspicuously orange-punctate in lines; stamens up to 3.75 mm. long; filaments united at base, 1.4–2.4 mm. long, orange-punctate; anthers erect, lanceolate, up to 2.5 mm. long, inconspicuously punctate with small pale orange-colored glands; ovary ovoid, glabrous except for minute tomentum apically and at base of style, tapering into the thick style; style 5–6 mm. long; placenta obovoid, apiculate; ovules 9, uniseriate, enclosed; fruits subglobose.

Fig. 57. *Parathesis tartarea* Lundell. 1, Flowering branch; × ½. 2, Stem, showing scaly epidermis; × 5. 3, Calyx, spread out; × 5. 4, Flower; × 5. 5, Petal, inner surface; × 5. 6, Stamen; × 5. 7, Pistil; × 5. Illustrated from type, *Julian A. Steyermark 36023* (F), by Vivien Frazier.

MEXICO.—Chiapas: Cerro del Boqueron, June, 1914, *C. A. Purpus 7335* (F, GH, NY, UC, US).

GUATEMALA.—San Marcos: along Quebrada Canjula, between Sibinal and Canjula, Volcan Tacana, alt. 2200–2500 m., Feb. 18, 1940, *Julian A. Steyermark 36023* (F, type; MICH, isotype), tree 50 ft. tall; leaves subcoriaceous, dull green above, tan beneath, petals white within, brownish without; Volcan Tajumulco, upper south-facing forested slopes, between Las Canojas and top of ridge, 7 miles from San Sebastian, alt. 3300–3900 m., Feb. 16, 1940, *Julian A. Steyermark 35806* (F), common large forest tree 50 ft. tall, tips of shoots brownish, leaves coriaceous, rich green above, pale beneath, "*sapotilla.*" Sololá: Volcan Santa Clara, south-facing slopes to summit, alt. 2100–3000 m., June 5, 1942, *Julian A. Steyermark 46957* (F), leaves dark green above, olive-brown beneath; Volcan Toliman (slopes above San Lucas Toliman), alt. 1800–3000 m., June 13, 1942, *Julian A. Steyermark 47606* (F, US), tree 30 ft. tall. Suchitepequez: Volcan Santa Clara, between Finca El Naranjo and upper slopes, alt. 1250–2650 m., May 23, 1942, *Julian A. Steyermark 46754* (F, S), tree 40 ft. tall. Quiche: 1942, *Jose Ignacio Aguilar 1345* (F).

60. Parathesis tomentosa Lundell, Wrightia 3: 74. 1963. Fig. 58 and Plate 27.

Small tree, branchlets slender, minutely appressed tomentulose at first, glabrescent; leaves with slender petioles 5–14 mm. long; leaf blades obovate or obovate-elliptic, 5–9.5 cm. long, 3.5–4.5 cm. wide, apex rounded and abruptly short acuminate, base cuneate, membranaceous, very sparsely and minutely stellate-lepidote on lower surface at first, essentially glabrous, pellucid-punctate, finely crenulate above, costa elevated beneath, plane above, primary lateral veins slender, 8 or 9 on each side, prominent beneath; inflorescences axillary and terminal, paniculate, up to 5 cm. long, 1- or 2-branched to base, few-flowered, sparsely puberulent, the branches very slender; pedicels filiform, 5–9 mm. long, sparsely and minutely puberulent; flowers corymbose; sepals subulate, 1–1.2 mm. long, pellucid-punctate, puberulent; petals linear-lanceolate, 3.5 mm. long, sparingly and minutely puberulent on outer surface, densely papillose-tomentose over entire inner surface, orange-punctate; ovary ovoid, tapering into style, densely tomentose over entire surface; style about 2.75 mm. long, tomentose to middle; placenta depressed-globose, short apiculate; ovules 8 or 9, uniseriate, apparently enclosed.

GUATEMALA.—Indefinite: Los Andes to Entre Rios, March 1, 1926, *S. J. Record G.44* (US, type; Y, isotype), small tree, "*chimiche.*"

Possibly related to *P. Rekoi* Standl., the species is altogether different in its small terminal inflorescences branched to base, obovate leaves, and densely tomentose ovary and style. No other species of *Parathesis* has the ovary so densely matted over its entire surface with tomentum extending to middle of style.

The specimen available does not have flowers, so the nature of the stamens is not known. The corolla is described from a single loose petal attached to a pedicel. This petal is papillose-tomentose over the entire inner surface.

61. Parathesis Skutchii Lundell, Contr. Univ. Mich. Herb. 6: 54. 1941. Fig. 59 and Plate 28.

Shrub or tree, up to 10 m. high, branchlets angled, stout, the indument of terminal buds and apical internodes smooth and closely appressed, tan in color, the branchlets at length minutely appressed-lepidote; leaves with petioles

Fig. 58. *Parathesis tomentosa* Lundell. 1, Flowering branches; × ½. 2, Calyx, spread out; × 5. 3, Petal, inner surface; × 5. 4, Pistil; × 5. Illustrated from type, *S. J. Record G.44* (US), by Vivien Frazier.

Plate 27. *Parathesis tomentosa* Lundell. Flowering branch. Isotype, *S. J. Record G.44* (Y).

Fig. 59. *Parathesis Skutchii* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *Alexander F. Skutch 1681* (F), by Vivien Frazier.

Plate 28. *Parathesis Skutchii* Lundell. Inflorescence with reduced terminal branches and small flowers. Type, *Alexander F. Skutch 1681* (F).

1.5–2.5 cm. long; leaf blades oblong-lanceolate or oblanceolate, 12–25 cm. long, 3.5–7 cm. wide, apex acuminate, base cuneate and decurrent, thinly chartaceous, finely crenulate to subentire, thinly stellate pubescent beneath or glabrous, papillose above at base and along petiole, costa slightly impressed above, prominent beneath, the primary lateral veins up to 25 on each side, slender; inflorescences axillary, paniculate, up to 20 cm. long, angled, short pedunculate, divaricately 2- or 3-branched, compact, the secondary branches reduced, the indument minute, very closely appressed; pedicels minutely papillose, appearing pruinose, 3–5 mm. long; flowers umbellate to short racemose-corymbose, minutely papillose-puberulent, about 3 mm. long at anthesis, the buds conspicuously angled; sepals minute, triangular, 0.5–0.75 mm. long, obtuse, punctate; petals lanceolate, 3–4 mm. long, densely papillose-tomentose over entire inner surface, punctate in lines; stamens 2–2.5 mm. long; filaments stout, up to 1.4 mm. long, epunctate; anthers erect, lanceolate, up to 1.75 mm. long, dorsifixed about one-third above base, acute, concolorous or with one to several small black glands dorsally; ovary depressed-ovoid, minutely white tomentose over entire surface, apically the hairs slightly longer, basal third of style minutely tomentose; style short, about 2.5 mm. long, punctate in lines; placenta subglobose or strongly depressed-globose, small, minutely apiculate; ovules 7–11, rather small, crowded, uniseriate, enclosed.

GUATEMALA.—Alta Verapaz: Chicoyonito, alt. 4300 pp., Apr. 1889, *John Donnell Smith 1706* (GH, US). Huehuetenango: above San Juan Ixcoy, Sierra de los Cuchumatanes, alt. 2400 m., Aug. 4, 1942, *Julian A. Steyermark 49994* (F, US), tree 30 ft. tall, leaves deep green above, paler green beneath. Quiche: Nebaj, in a remnant of the cloud forest, alt. 7700 ft., Nov. 16, 1934, *Alexander F. Skutch 1681* (F, type; A, US, isotypes), shrub, 20 ft. high, fls. white, berries red; El Boqueron, near Nebaj, in mossy wet ravine, alt. 8000–8200 ft., Aug. 15, 1964, *George R. Proctor 25532* (LL), shrub, 5 m.

The angled and compressed peduncles and branches of the inflorescences, the reduced peduncles of the umbels, sometimes scarcely 1 mm. long, petals less than 4 mm. long, angled buds, and the minute smooth indument of terminal buds and branchlets, serve to characterize this very distinctive species.

The Steyermark collection, in young fruit, has pedicels up to 6 mm. long. They may be accrescent as in some other members of the genus.

62. Parathesis latifolia Lundell, Wrightia 3: 83, *fig. 51*. 1963. Fig. 60.

Shrub, branchlets stout, the indument of terminal buds and apical internodes smooth and tightly appressed, tan in color; leaves with short thick petioles up to 1.5 cm. long, at first sparsely papillose above at base and along petiole, otherwise glabrous; leaf blades obovate-elliptic, 14–25 cm. long, 7.5–9 cm. wide, apex abruptly short acuminate, the acumen obtuse, base cuneate, decurrent, chartaceous, irregularly crenate, costa plane above, prominent beneath, primary lateral veins very slender; inflorescences axillary, paniculate, up to 10 cm. long, including peduncle 3 cm. long, angled, 1- or 2-branched, compact, the secondary branches reduced, sometimes only 1 mm. long, the indument minute, very closely appressed; pedicels papillose-puberulent, 4–6 mm. long; flowers subcorymbose, 5 mm. long at anthesis, finely papillose-tomentulose; sepals 1–1.5 mm. long, acute, red-punctate; petals lanceolate, about 6 mm. long, papillose-tomentose on inner surface except for glabrous area above base, papillose at

Fig. 60. *Parathesis latifolia* Lundell. 1, Flowering branch; × ½. 2, Pedicel and calyx; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type, *L. Irby Davis & Edgar Kincaid 55–50* (TEX), by Vivien Frazier.

base, punctate in lines; stamens 3–3.4 mm. long; filaments glabrous, 1.5–1.7 mm. long; anthers erect, lanceolate, up to 2.5 mm. long, acute, punctate dorsally and in lobes with small red-black glands, dorsifixed one-third above base; ovary ovoid, ribbed, finely tomentose over entire surface and almost to middle of style, the apical hairs short villous and longer; style 4 mm. long; placenta depressed-globose, apiculate; ovules 8 or 9, subglobose, uniseriate, enclosed.

MEXICO.—Chiapas: near Colonia Tizcao, on the Guatemalan border, in huge sweetgum-oak cloud forest, alt. about 4700 ft., April 23, 1955, *L. Irby Davis & Edgar Kincaid 55–50* (TEX, type), shrub.

63. Parathesis leptopa Lundell, Contr. Univ. Mich. Herb. 7:41. 1942. Fig. 61.

Shrub or small tree; branchlets rather stout, angled, ferruginous-tomentose with sessile stellate hairs, some short dendroid hairs present; leaves with petioles 1–3 cm. long; leaf blades lanceolate-elliptic or oblanceolate, 10–22 cm. long, 3–7 cm. wide, apex subabruptly acuminate, base acuminate and decurrent, membranaceous to chartaceous, entire to obscurely crenulate, at first sparsely papillose-puberulent above at base and along petiole, the young leaves ferruginous-tomentose beneath with fine stellate subappressed stellate hairs, sparse subappressed indument persisting to maturity, especially along midvein, glabrescent, costa slightly impressed above, elevated beneath, the primary lateral veins 19–26 on each side, slender, slightly impressed above; inflorescences axillary, sometimes appearing to be terminal with greatly reduced leaves, panicles long-pedunculate, 1- or 2-branched, many-flowered, 5–20 cm. long, ferruginous-tomentulose, the small sessile hairs stellate, subappressed but with erect or spreading rays, sometimes papillose-puberulent; pedicels slender, 5–9 mm. long; flowers 5- or 6-parted, umbellate, densely papillose-puberulent, up to 7 mm. long at anthesis; sepals triangular, 1.3–1.5 mm. long, acuminate, orange-red punctate; petals linear-lanceolate, 5–7 mm. long, orange-red punctate in lines, papillose-tomentose on inner surface, with or without glabrous area at base, with or without papillose ring at base; stamens 3–4.5 mm. long; filaments 1.75–2.75 mm. long, equaling or slightly longer than anthers, punctate, united at base into a shallow ring; anthers erect or sometimes appearing versatile, lanceolate, 1.75–2.4 mm. long, dorsifixed one-third above base, dorsally punctate with few small reddish-black glands, sometimes appearing eglandular; ovary finely tomentose almost to base, the indument minute and appressed below, short villous above and at base of style mostly with branched hairs, the ovary tapering into style, often slightly ribbed, style about 5 mm. long; placenta subglobose, apiculate; ovules 5–9, rather large, uniseriate, enclosed.

MEXICO.—Chiapas: Saxchanal, Sierra Madre, in advanced forest, alt. 2700 m., July 1, 1941, *Eizi Matuda 4297* (MICH, type; A, LL, MEXU, MO, US, isotypes), small tree, 3 m. high; Saxchanal, in cloud forest, alt. 2000 m., May 11, 1948, *Eizi Matuda 17806* (F), a tree 15 m. tall, 30 cm. diam.

GUATEMALA.—Alta Verapaz: Coban, alt. 1300 m., May, 1882, *F. C. Lehmann 1420* (BM, G, US); Sasis, alt. 5000 pp., Apr. 1889, *H. Helmrich 1693* (GH, US); large swamp east of Tactic, alt. about 1450 m., Apr. 14, 1941, *Paul C. Standley 92564* (F, G), *92586* (F, US), *92617* (F), shrub or small tree, corolla white, pink, or deep bright rose; N. O. de Tactic, 6 kms. a Estor, alt. 1500 m., May 15, 1963, *Antonio Molina R. & Albertina R. Molina 12311* (F), fls. blancas, arbusto 4 m. Chimaltenango: Chichavac, oak-pine forests, alt. 2400–2700 m., Mar. 2, 1933, *Alexander F. Skutch 307* (A, MICH, US), shrub 10 ft. high, fls. pink, berry nearly black,

Fig. 61. *Parathesis leptopa* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from isotype, *Eizi Matuda 4297* (A), by Vivien Frazier.

one-half inch diam.; Chichavac, in heavy forest, alt. 8–9000 ft., July 9, 1933, *Alexander F. Skutch 377* (A, F), shrub 6 ft. high, fls. pink. QUICHE: Nebaj, in low forest, ca. 13 km. n., on Cotzal Road, alt. 6000 ft., July 1, 1964, *Elias Contreras 5147* (LL), shrub, 1 in. diam., 7 ft. high; Nebaj, in high forest, ca. 10 km. w., alt. 8000 ft., July 3, 1964, *Elias Contreras 5189* (LL), shrub, 2 in. diam., 7 ft. high, "*cuxma*"; valley of Rio de las Violetas, n. of Nebaj, on wet bank beside waterfall, 5800–6000 ft., July 22, 1964, *George R. Proctor 25227* (LL), shrub, 1.5 m.; Falls of Rio de las Violetas, 2.5 miles n. of Nebaj, c. 5500 ft., Aug. 7, 1934, *George R. Proctor 25448* (LL), shrub, 2.5 m., fr. green. SANTA ROSA: Zamorora, alt. 5500 pp., Apr. 1893, *Enrico Teophilo Heyde & Ernesto Lux 4535* (A, F, G, GH, MICH, MO, NY, US). INDEFINITE: Palencia, alt. 1480 m., Feb. 1928, *Morales 942* (US).

In the Skutch specimens, the filaments are slightly shorter than the anthers, but otherwise the collections agree quite well with the type of *P. leptopa*. *Heyde & Lux 4535* from Zamorora, Guatemala, is a mixture of *P. reflexa* Brandeg. with *P. leptopa*, and the specimens of *P. reflexa* have been designated *4535A*.

The anthers in the species are variable in size, some being quite slender, but all have the small reddish glands dorsally, and these are usually few and inconspicuous.

64. PARATHESIS TENUIS Standl., Contr. U. S. Nat. Herb. 23: 1111. 1924; Schultes, Bot. Mus. Leafl. 9: 187–190, *pl. 8*. 1941. Fig. 62 and Plate 29.

Small tree, up to 5 m. high, branchlets slender, minutely tomentulose; leaves with slender petioles 3–9 mm. long; leaf blades elliptic or lanceolate-elliptic, 3.5–6 cm. long, 1–2 cm. wide, apex caudate-acuminate, cuspidate, base cuneate, membranaceous, entire or essentially so, glabrous, costa prominent, the primary lateral veins very slender; inflorescences axillary, simple or 1-branched, paniculate, shorter than leaves, sparsely and minutely puberulent, the peduncle long and filiform; pedicels filiform, 5–9 mm. long; flowers corymbose, up to 3 mm. long at anthesis, minutely tomentulose; sepals narrowly triangular, about 0.75 mm. long, orange-punctate; petals linear-lanceolate, about 3 mm. long, orange-punctate in lines, short papillose-tomentose within apically and along edges; stamens 2 mm. long; filaments short and slender, about 1.3 mm. long, glabrous; anthers narrowly triangular, up to 1.5 mm. long, acuminate, dorsifixed about one-fourth above base, epunctate dorsally or sometimes with one or two small black glands above attachment; ovary ovoid, finely and minutely tomentulose; style about 2.5 mm. long, slender, puberulent basally; placenta subglobose, apiculate; ovules 3 or 4, uniseriate, minute, erect, enclosed; fruit depressed-globose, drying 5–6 mm. in diam., shallowly costate.

MEXICO.—OAXACA: District of Choapam, Cerro Caracol, between San Juan Lalana and Santo Domingo Latani, lat. 17° 26′, long. 95° 49′, alt. 1400–1650 m., May 11, 1939, *Richard Evans Schultes & Blas Pablo Reko 865* (LL), small slender tree up to 15 ft. tall, sepals small and brown, corolla white, brown-spotted, stamens large and yellow, conspicuously reflexed corolla showing stamens, fruits small, edible, "*ma-ku-lai*." INDEFINITE: June, 1842, *F. M. Liebmann 14* (US, type; C, F, GH, LL, MICH, NY, isotypes); Sierra San Pedro Nolasco, Talea, & c., 1843–4, *C. Juergensen s.n.* (G).

P. tenuis is a rarely collected species notable for its simple or 1-branched filiform inflorescences, small leaves, small flowers, slender acuminate anthers eglandular or with one or two black dorsal glands, and minute placenta with only 3 or 4 enclosed ovules.

Fig. 62. *Parathesis tenuis* Standl. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *F. M. Liebmann 14* (US), by Vivien Frazier.

Plate 29. *Parathesis tennis* Standl. Flowering branch. Isotype, *F. M. Liebmann 14* (C).

65. PARATHESIS SUBULATA Lundell, Wrightia 3: 74. 1963. Fig. 63 and Plate 30.

Shrub, up to 3 m. high, branchlets slender, at first sparsely appressed tomentulose, glabrescent; leaves with slender petioles 5–15 mm. long; leaf blades lanceolate-oblong, 5–9.5 cm. long, 1.2–2.3 cm. wide, apex caudate-acuminate, base acuminate, glabrous, membranaceous, slightly paler beneath, obscurely and minutely crenulate, pellucid-punctate, costa slender and elevated beneath, plane above, primary lateral veins slender, 12–15 on each side; inflorescences axillary, few-flowered, paniculate, 3–6 cm. long, usually 1-branched, glabrous or essentially so, the peduncles slender but firmly erect; bractlets foliaceous, up to 7 mm. long; pedicels slender, 3–6 mm. long; flowers corymbose; sepals about 0.75 mm. long, sparsely and minutely puberulent, orange-punctate; corolla and stamens unknown; ovary ovoid, minutely appressed tomentulose; style slender, 3–4 mm. long, puberulent basally; placenta depressed-globose; ovules 7 or 8, uniseriate, exposed apically; young fruits globose.

MEXICO.—CHIAPAS: mountains near Fenia, shady forest, Apr. 1925, *C. A. Purpus 23* (LL, US).

GUATEMALA.—HUEHUETENANGO: Sierra de los Cuchumatanes, vicinity of Maxbal, about 17 miles north of Barillas, alt. 1500 m., July 15–16, 1942, *Julian A. Steyermark 48829* (F, US), shrub, 10 ft. tall, ovary rose-colored; Sierra de los Cuchumatanes, Cerro Victoria near Barillas, in *Liquidambar-Pinus* forest, alt. 1800–2000 m., July 29, 1942, *Julian A. Steyermark 49714* (F, type; US, isotype), shrub, 8–10 ft. tall, fruit turning dull rose-red, leaves firmly membranous, deep green above, paler grass green beneath.

Clearly akin to *P. tenuis* Standl. of Oaxaca, but differing notably in having 7 or 8 ovules exposed apically, and with style up to 4 mm. long. In *P. tenuis* the 3 or 4 ovules are enclosed. The oblongish leaves with longer petioles and minute subulate sepals are other distinguishing characteristics.

The Chiapas collection, *C. A. Purpus 23*, has 5 or 6 ovules, exposed apically as in *P. subulata*, and slender erect acuminate anthers up to 1.8 mm. long with two or three dorsal glands. In *P. tenuis* the anthers are similar, but smaller and usually glandless. The Chiapas shrub is in some aspects intermediate between the two species, but referable to *P. subulata*.

66. PARATHESIS REKOI Standl., Contr. U. S. Nat Herb. 23: 1111. 1924.
Fig. 64 and Plate 31.

Branchlets slender, minutely tomentulose with appressed hairs; leaves with slender petioles 10–14 mm. long; leaf blades obovate-elliptic or elliptic, 5.5–9 cm. long, 2.5–3.5 cm. wide, apex obtusely short-acuminate, base cuneate, membranaceous, entire or undulate-crenate, sparsely pubescent on lower surface with small appressed stellate hairs, glabrescent, costa elevated beneath, the primary lateral veins slender, 12–14 on each side; inflorescences axillary, divaricately paniculate, 2-branched, the peduncles and branches very slender and lax, many-flowered, 10–13 cm. long, sparingly pubescent with minute appressed stellate hairs; pedicels filiform, 4–10 mm. long, apparently accrescent, glabrous; flowers corymbose, at anthesis about 4 mm. long, minutely papillose-puberulent; sepals subulate, 1–1.4 mm. long, orange-punctate; petals linear-lanceolate, 4–5 mm. long, papillose-tomentose within over entire surface, inconspicuously orange-punctate; stamens about 3.75 mm. long; filaments 2.7–3 mm. long, sparingly papillose-puberulent below middle; anthers erect, linear-triangular, about 1.2

Fig. 63. *Parathesis subulata* Lundell. 1, Flowering branch; × ½. 2, Fruit, enlarged. 3, Calyx; × 5. Illustrated from type, *Julian A. Steyermark 49714* (F), by Vivien Frazier.

Plate 30. *Parathesis subulata* Lundell. Fruiting branch. Type, *Julian A. Steyermark 49714* (F).

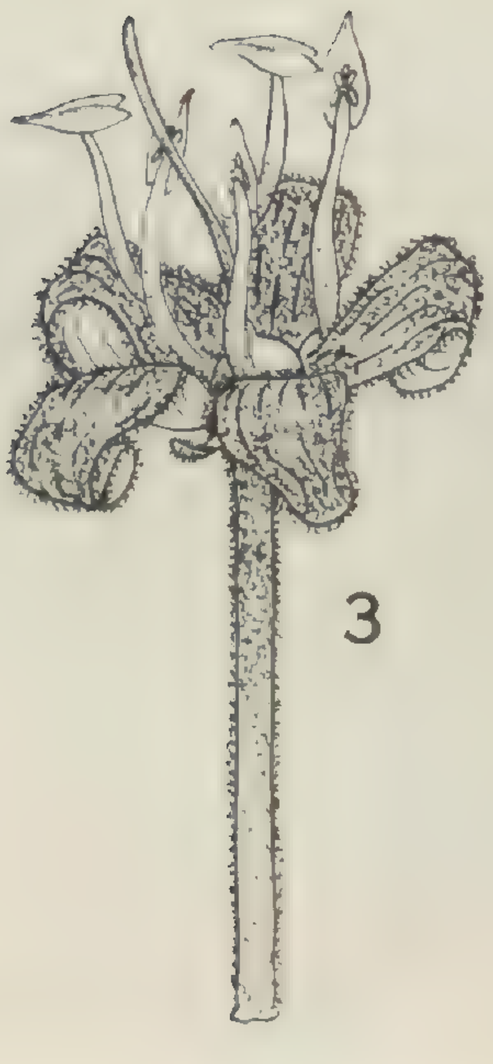


Fig. 64. *Parathesis Rekoi* Standl. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *B. P. Reko 3335* (US), by Vivien Frazier.

Plate 31. *Parathesis Rekoi* Standl. Leaf, flowers and immature fruits. Type, *B. P. Reko 3335* (US).

mm. long, acuminate, dorsifixed one-third above base, with several small orange glands dorsally; ovary ovoid, tapering into style, sparsely puberulent at apex; style slender, 4–4.5 mm. long, puberulent at base, sparingly short pilose above to middle; placenta strongly depressed-globose, apiculate; ovules minute, 8, tardily exposed apically, uniseriate.

MEXICO.—Oaxaca: from Juguila to Cututepeque, S. W. by South from Oaxaca, March 1, 1845, *C. Juergensen 73* (G); locality indefinite, *H. Galeotti 1719* (P); Cerro Espino, Cafetal Soledad, alt. 800 m., Aug. 1917, *Blas Pablo Reko 3335* (US, type).

P. Rekoi and *P. macronema* Bullock are scarcely separable on the basis of material available, but additional collections from Oaxaca may show that there are two species. *P. macronema* has ligulate sepals, 0.6–1 mm. long, while the sepals of *P. Rekoi* are subulate and up to 1.4 mm. long. In *P. Rekoi* the flowers are smaller, the style is sparsely short pilose to middle, and the leaves are obovate or obovate-elliptic.

67. Parathesis macronema Bullock, Hooker's Ic. Plant. 34, *pl. 3397*. 1939.

Ardisia chiapensis Brandeg., Univ. Calif. Publ. Bot. 10: 413. 1924, not *Parathesis chiapensis* Fernald, 1901.

Parathesis Hintonii Lundell, Wrightia 3: 82. 1963.

Shrub or small tree, up to 4 m. tall, branchlets rather slender, at first ferruginous-tomentose with closely appressed stellate hairs, glabrescent; leaves very variable in size and shape, with slender petioles 5–20 mm. long; leaf blades oblong-elliptic, lanceolate, or oblanceolate, 5–20 cm. long, 1.2–5 cm. wide, apex obtuse to obtusely acuminate, base cuneate, subentire to finely crenulate-serrulate, membranaceous to subchartaceous, at first rather sparsely pubescent on lower surface with small appressed stellate hairs, glabrous at maturity, costa elevated beneath, the primary lateral veins very slender, 14–16 on each side; inflorescences axillary, slender, lax, paniculate, 5–18 cm. long, 1- or 2-branched, bracteate, with long slender tomentulose peduncles, the branches sparsely puberulent; pedicels filiform, 5–17 mm. long, accrescent; flowers corymbose or racemose-corymbose, minutely granular-puberulent, 4–6 mm. long at anthesis; sepals ligulate, 0.6–1 mm. long, orange-punctate; petals triangular-linear, 4–6.5 mm. long, densely papillose-tomentose over entire inner surface, prominently orange-punctate in lines; stamens 3.75–4.5 mm. long; filaments rather slender, 2.75–3.5 mm. long, papillose-puberulent below middle; anthers erect, linear-lanceolate, 1–1.3 mm. long, base sagittate, apex acuminate to cuspidate, usually with several orange-colored glands dorsally, sometimes eglandular; ovary ovoid, sparsely puberulent apically; style slender, 3.5–5 mm. long, rather sparsely puberulent basally; placenta subglobose, apiculate; ovules (6) 7 or 8 (10), uniseriate, enclosed or tardily exposed apically; fruits globose or depressed-globose, drying up to 7 mm. in diam.

MEXICO.—Chiapas: Hacienda Monserrate, Sept. 1923, *C. A. Purpus 9273* (US, type of *Ardisia chiapensis* Brandeg.; F, GH, LL, NY, isotypes); gulches near Fenia, May, 1925, *C. A. Purpus 154* (US); along brook, Fenia, May, 1925, *C. A. Purpus 310* (LL, US); Fenix, along mountain brooks, May–June, 1925, *C. A. Purpus 10310* (NY); Rancho Phoenix, wet ground, May, 1926, *C. A. Purpus 10023* (GH, LL, S, UC). Guerrero: El Porvenir, alt. 950 m., Mar. 26, 1899, *E. Langlasse 967* (GH); District Mina, Aguazarca, arroyo, May 1, 1937, *Geo. B.*

Hinton 10402 (UC, type of *P. Hintonii*; K, LL, US, isotypes) tree 5 m.; District Montes de Oca, Banco, Oct. 14, 1937, *Geo. B. Hinton 10803* (K, type; BM, F, G, GH, LL, MICH, MO, S, US, isotypes), shrub 4 m., fl. pinkish white; District Galeana, Sierrita, edge of stream, alt. 800 m., Apr. 13, 1939, *Geo. B. Hinton 14150* (F, GH, LL, MICH, MO, US), tree 3 m. high, flowers white, fruits red.

P. macronema and *P. Rekoi* Standl. are remarkable for their comparatively long filaments, which are bright purple in color contrasting with the small very slender bright yellow anthers.

The Chiapas specimens vary considerably. Usually they have much smaller and narrower leaves, and mostly smaller flowers. *Purpus 10023* and *10310* are atypical, with extremes of these features.

68. Parathesis Candolleana Mez, Pflanzenreich IV. 236: 179. 1902. Fig. 65.

Branchlets thick, the terminal bud and apical internodes minutely and appressed puberulent; leaves with slender petioles 1–2 cm. long; leaf blades elliptic or obovate-elliptic, up to 20 cm. long, 8 cm. wide, apex rather abruptly acuminate, base acute or subacuminate, membranaceous, sparsely and minutely pubescent at first on lower surface with stellate appressed hairs, glabrous at maturity, entire or obscurely and irregularly crenulate, costa elevated beneath, the primary lateral veins slender; inflorescences axillary, multiflowered, laxly paniculate, up to 20 cm. long, long pedunculate, the primary and secondary branches slender, minutely puberulent; pedicels slender, densely puberulent, up to 8 mm. long; flowers umbellate, minutely puberulent, up to 6 mm. long at anthesis; sepals narrowly triangular, 1–1.3 mm. long, acuminate, densely punctate with reddish glands; petals 6 mm. long, reddish-punctate in lines, papillose-tomentose over entire inner surface; stamens up to 3.75 mm. long; filaments slender, up to 2.5 mm. long, sparsely short pilose below with gland-tipped hairs; anthers erect, linear-lanceolate, up to 2 mm. long, shorter than filaments, dorsifixed one-third above base, reddish-black punctate dorsally with small glands extending down into lobes; ovary ovoid, short villous-tomentulose above middle and at base of style; style up to 5 mm. long, with scattered hairs to above middle; placenta obovoid, minutely apiculate; ovules 7, uniseriate, enclosed.

COLOMBIA.—Bogota: Susumuso et Villa-vicencio, alt. 400–1000 m., 1851–1857, *J. J. Triana 2581* (P, lectotype; G, K, isotypes).

Specimens at Kew of two other collections cited by Mez in the original description of *P. Candolleana* (*Hartweg, Goudot*) are referable to *P. adenanthera* (Miq.) Hook.f. Another, *L. J. Schlim 146*, is *P. venezuelana* Mez! Mez's drawing of the flower, attached to *Lehmann 7515* at Berlin, corresponds in all details to the flower of *Triana 2581* (K, P), and I suspect that it was made from this collection, rather than the Lehmann specimen, which appears to be past anthesis in the photograph (type negative 4873 at Chicago). My interpretation of the species is based on *Triana 2581* (K, P), and I designate the specimen at Paris as the lectotype. The branchlets, puberulent apically, the very slender anthers, 2 mm. long and shorter than the filaments, and filaments short pilose with gland-tipped hairs, are features to be noted. *P. Candolleana* superficially resembles *P. venezuelana* Mez, but has affinity to *P. adenanthera* (Miq.) Hook.f.

The *Hartweg* specimen at Kew is the type of *Ardisia ferruginea* H.B.K. var.? *macrophylla* Benth.!

Fig. 65. *Parathesis Candolleana* Mez. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from isotype, *J. Triana 2581* (K), by Vivien Frazier.

69. PARATHESIS ADENANTHERA (Miq.) Hook.f., ex Mez, Pflanzenreich IV. 236: 179. 1902. Fig. 66 and Plate 32.

Ardisia adenanthera Miq., Fl. Brasil. 10: 285. 1856.
Tinus adenanthera (Miq.) O. Ktze, Rev. Gen. 2: 974. 1891.
Ardisia ferruginea H.B.K. var.? *macrophylla* Benth., Pl. Hartweg. 217. 1846; Benth. & Hook. f., Gen. Pl. 2: 645. 1876.
Parathesis macrophylla (Benth.) Britton, ex Rusby, Mem. Torrey Club 4: 217. 1895, not *P. macrophylla* Rusby, ex Mez, Pflanzenreich IV. 236: 180. 1902.
Parathesis rubella Moldenke, Phytologia 1: 11. 1933.

Shrub or tree, up to 6 m. high, branchlets rather stout, at first ferruginous-tomentose with appressed stellate hairs; leaves with petioles 1–2 cm. long; leaf blades elliptic, oblong-elliptic or obovate-elliptic, 10.5–28 cm. long, 5–10 cm. wide, apex subabruptly acuminate, base acute to acuminate, membranaceous, irregularly undulate and crenulate, sometimes appearing subentire, at first pubescent on lower surface with small ferruginous appressed stellate hairs, glabrescent, costa slightly impressed above, elevated and conspicuous on under surface, the primary lateral veins slender; inflorescences axillary, usually very large, open, lax, tripinnately paniculate, 15–33 cm. long, the peduncle and primary and secondary branches long, minutely ferruginous-puberulent, often densely so; pedicels slender, 4–7 mm. long, in fruit up to 13 mm. long; flowers subcorymbose, densely and minutely ferruginous-puberulent, punctate with reddish glands, 5–7 mm. long at anthesis; sepals narrowly triangular, 1–1.5 mm. long, acuminate, minutely puberulent, densely reddish-punctate; petals narrowly triangular-lanceolate, 5–7 mm. long, papillose-tomentulose on inner surface, densely reddish-punctate in lines; stamens 2.5–4 mm. long; filaments slender, 2–3 mm. long, pubescent with short gland-tipped hairs; anthers erect, small, lanceolate, 0.8–1.5 mm. long, apiculate, with several small reddish glands dorsally, dorsifixed about two-fifths above base; ovary ovoid, ferruginous-tomentulose apically and at base of style with short shaggy hairs; style 3–4.5 mm. long; placenta depressed-globose, apiculate; ovules 5–8, uniseriate, enclosed; fruits subglobose, up to 16 mm. diam. when ripe, ferruginous-puberulent at first, glabrescent, costate.

COSTA RICA.—Yerba Buena, northeast of San Isidro, Provincia de Heredia, wet forest, alt. about 2000 m., Feb. 22, 28, 1926, *Paul C. Standley & Juvenal Valerio 49856* (US), shrub 10 ft., fruit pale red; San Jose, Cerro Gallito, hasta 2000 m., Feb. 3, 1935, *Manuel Valerio 1190* (F).

COLOMBIA.—Prov. Bogota, Hacienda de Palmar, village of Guadua, *Karl Theodor Hartweg s.n.* (K, type of *Ardisia ferruginia* H.B.K. var.? *macrophylla* Benth.), a shrub 6 ft. high; Valparaiso, vicinity of Medellin, July 22, 1928, *Rafael A. Toro 1363* (NY); Dept. Boyaca, region of Mt. Chapon, northwest of Bogota, stream-side in high thick forest, alt. 6000 ft., July 31, 1932, *A. E. Lawrence 372* (NY, type of *P. rubella*; A, BM, F, G, GH, MO, S, isotypes), tree 15–20 ft., 8–12 in., fls. pink; Dept. del Valle, Cordillera Occidental, vertiente occidental, Hoya del Rio Sanquinini, lado izquierdo, La Laguna, bosques, alt. 1250–1400 m., Dec. 10–20, 1943, *Jose Cuatrecasas 15426* (F), arbolito; Hoya del Rio Cali, Pichinde, entre La Marina y La Margarita, potreros y residuos de Monte, alt. 2120–2260 m., Nov. 4, 1944, *Jose Cuatrecasas 18600* (F, G), arbolito, 6 m., drupas rojas, brillantes, esferico aplastadas 16 mm. diam.; Valle, La Cumbre, quebrada La Ventura, alt. 1650 m., Apr. 9, 1947, *Lorenzo Uribe Uribe 1552* (F); without locality, 1760–1808, *Jose Celestino Mutis 474* (US); *Justin Goudot s.n.* (G, K, P).

PERU.—Cuchero, *E. F. Poeppig 1667* (F, GH, P, isotypes); La Merced, alt. ca. 2000 ft.,

Fig. 66. *Parathesis adenanthera* (Miq.) Hook.f. 1, Flowering branch; × ½. 2, Fruit; × ½. 3, Flower, × 5. 4, Stamen, showing gland-tipped hairs of filament; × 5. 5, Pedicel, calyx and pistil; × 5. Illustrated from *R. S. Williams 452* (US), by Vivien Frazier.

Plate 32. *Parathesis adenanthera* (Miq.) Hook.f. Specimen showing large slender inflorescences often longer than leaves, *R. Pearce s.n.* (K).

Aug. 10–24, 1923, *J. Francis Macbride 5519* (F), slender 15 ft. tree; La Merced, Hacienda Schunke, alt. ca. 4000 ft., Aug. 27–Sept. 1, 1923, *J. Francis Macbride 5604* (F), slender 6 ft. shrub, fruits very dark red; Dept. Junin, east of Quimiri Bridge, near La Merced, dense forest, alt. 800–1300 m., June 1–3, 1929, *E. P. Killip & Albert C. Smith 23912* (US), shrub, 10–12 ft.; Rio Paucartambo Valley, near Perene Bridge, alt. 700 m., June 19, 1929, *E. P. Killip & Albert C. Smith 25392* (F, NY, US), tree, 15–20 ft.; Dept. and Prov. Huanuco, near confluence of Rio Cayumba with Huallaga, virgin forest on slope above river, alt. 860 m., Oct. 13, 1936, *Ynes Mexia 8286* (BM, F, G, GH, LL, MO, NY, S, UC, US), shrub 5 m. high, mature fruit black, common; Tarapoto, *R. Spruce s.n.* (K); Moro, Jan., 1866, *R. Pearce s.n.* (BM, K), shrub, 4–6 ft.; without locality, July, 1854, *W. Lechler 2473* (K); *H. Ruiz & J. Pavon s.n.* (K).

BOLIVIA.—Tumupasa, alt. 1800 ft., Dec. 12, 1901, *R. S. Williams 452* (BM, NY, US), slender bush, 15 ft. high, fls. purplish; Rurrenabaque, alt. 1000 ft., Dec. 9, 1921, *M. Cardenas 1967* (GH, K, MICH, NY, US). INDEFINITE: N. Grenade, 1844, *Justin Goudot s.n.* (P).

The Costa Rican collections are in fruit, but they appear to be referable to this species.

70. PARATHESIS PSYCHOTRIOIDES Lundell, Contr. Univ. Mich. Herb. 6: 53. 1941. Frontispiece, Fig. 67 and Plate 33.

Shrub, or tree up to 4 m. high, branchlets rather stout, at first tomentulose with minute stellate very closely appressed hairs, appearing lepidote, glabrescent early; leaves with slender petioles up to 2.2 cm. long; leaf blades obovate or oblanceolate-elliptic, 9–25 cm. long, 4–10 cm. wide, apex obtuse or subabruptly short acuminate, the acumen obtusish, base cuneate, decurrent, margin entire, inconspicuously undulate, the leaf buds and young leaves densely pubescent on both surfaces at first with very closely appressed fine stellate hairs, densest along costa and veins, glabrescent very early, costa impressed above, prominent beneath, the primary lateral veins slightly impressed above, slender but rather conspicuous on both surfaces, the veins ending in marginal calloses; inflorescences axillary, paniculate, the panicles up to 13 cm. long, 1- or 2-branched often to base, the secondary branches reduced, sometimes with long peduncles, the peduncles and branches slender, rigid, sparsely short villous and puberulent at first, glabrescent; bractlets linear-lanceolate and persistent; pedicels slender, 2.5–5 mm. long; flowers umbellate, corymbose or short racemose-corymbose in fruit, the buds slender, usually about 5 mm. long at anthesis, rarely up to 6 mm., puberulent; sepals up to 2 mm. long, red-black punctate in lines, puberulent; petals linear-lanceolate, 5–6 mm. long, red-black punctate in lines, papillose-tomentose on inner surface except at base; stamens 2.5–3.5 mm. long; filaments 1.3–2 mm. long, subequaling or sometimes longer than anthers, slender above, thicker below, usually punctate; anthers dorsifixed about one-fourth above base, slender, sometimes sagittate, 1.4–2 mm. long, obtuse, concolorous or punctate dorsally with several small reddish glands; ovary ovoid, short pilose at apex and at base of style, often sparingly so; style 3.5–4 mm. long, punctate in lines; placenta subglobose, apiculate; ovules 7 or 8, uniseriate, enclosed; fruits subglobose, drying costate, 5–6 mm. in diam.

MEXICO.—MEXICO: Dist. Temascaltepec, Pungarancho, by the river, Jan. 14, 1933, *Geo. B. Hinton 3144* (A, BM, G), shrub 1.5 m.; Ixtapan, Oct. 31, 1935, *Geo. B. Hinton 8617* (BM, F, G, LL, MEXU, MO, S, US), tree 4 m.; Pungarancho, Nov. 28, 1935, *Geo. B. Hinton 8753* (BM, F, G, GH, LL, MO, TEX, US), shrub 2 m. high. OAXACA: Distrito de Tuchitan, El Barrio, Lagunas, alt. 200 m., Oct. 21, 1919, *Cassiano Conzatti 3700* (LL, US). VERACRUZ:

Fig. 67. *Parathesis psychotrioides* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from type, *C. A. Purpus s.n.* (UC), by Vivien Frazier.

Plate 33. *Parathesis psychotrioides* Lundell. Leaf base and immature fruits, *M. Bourgeau 1580* (P).

Valley of Cordoba, Dec. 12, 1865–1866, *M. Bourgeau 1580* (F, K, LL, P); same locality, Dec. 14, 1865–1866, *M. Bourgeau 2252* (GH, K, P); Cordoba, Jan. 1904, *C. A. Purpus s.n.* (UC, type); Cordoba, Jan. 25, 1906, *J. M. Greenman 159* (F, GH); Ejido de Manzanares, 1–4 km. nw. of Campo Experimental de Hule, El Palmar, Zongolica, Feb. 1, 1944, *Jose Vera Santos 2763* (LL, MICH), 3 m. tall; vicinity of Rio Tonto, Ejido de Almilinga, 6 km. west of Campo Experimental de Hule, El Palmar, Zongolica, *Jose Vera Santos 2829* (LL, MICH), shrub 3 m. tall, mature fruits red. INDEFINITE: Mesas de San Diego, Mar. 18, 1951, *Helia Bravo H. 53* (MEXU).

71. PARATHESIS MELANOSTICTA (Schlecht.) Hemsl., Biol. Centr. Amer. Bot. 2: 291. 1882. Fig. 68 and Plates 34, 35.

Ardisia melanosticta Schlecht., Linnaea 8: 526. 1833, not Lauterbach & K. Schum., 1900.
Parathesis Matudai Lundell, Am. Midland Nat. 19: 431. 1938.

Branchlets rather stout, finely tomentose with very closely appressed stellate hairs; leaves with petioles up to 2 cm. long; leaf blades obovate, oblanceolate or elliptic, 6–20 cm. long, 2.5–7 cm. wide, apex subabruptly acuminate, base acute to acuminate, membranaceous, crenulate, often obscurely so, at first pubescent on lower surface with fine closely appressed stellate hairs, densest along petiole and costa, glabrescent, the costa elevated beneath, impressed above, the primary lateral veins conspicuous beneath, impressed above; inflorescences axillary, up to 12.5 cm. long, slender but rigid, paniculate, 1- or 2-branched, the branches rather rigid, at right angles, puberulent to minutely tomentulose; pedicels slender, 3–8, sometimes up to 10 mm. long, minutely puberulent; flowers subcorymbose, finely puberulent, 3.5–5 mm. long at anthesis; sepals minute, triangular, 0.6–1 mm. long, acute or subulate, black-punctate, puberulent; petals linear-lanceolate, up to 5 mm. long, densely black-punctate in lines, finely papillose-tomentose on inner surface except at base; stamens about 2.5 mm. long; filaments slender, about 1 mm. long, usually black-punctate; anthers lanceolate 1.5–2 mm. long, tapering to the acutish apex, dorsifixed about one-third above base, dorsally sparingly black-punctate with small glands; ovary minutely puberulent, the hairs usually longer apically, rather sparsely pubescent at base of style; style black-punctate in lines, 2.5–3.5 mm. long; placenta globose, short stipitate, apiculate; ovules 7, uniseriate, enclosed.

MEXICO.—OAXACA: Inquila, *H. Galeotti 1719* (G); Cuicatlan, camino entre Papalo y la Cumbre de Cheve, alt. 2500 m., June 16–22, 1898, *V. Gonzalez & Cassiano Conzatti 772* (GH); Distrito de Cuicatlan, alt. 2000 m., April, 1901, *V. Gonzalez & Cassiano Conzatti 1257* (GH); Distrito de Cuicatlan, De Cuyamecalcoa a Santa Ana, 1500 mts., June 23, 1909, *Cassiano Conzatti 2486* (F). PUEBLA: D. de Huauchinango, Pahuatlan, April 6, 1914, *F. Salazar s.n.* (MEXU); Tehuacan area, above Teotitlan del Camino on the road to Huautla, in rain forest at top of range, alt. ca. 2000–3250 m., Aug. 3, 1961, *C. E. Smith, Jr., F. A. Peterson, & Narcisso Tejeda 4149* (F), shrub to 2.5 m. tall, flowers pink, fruits dark red. VERACRUZ: in sylvis inter S. Salvador et Jalapam, *C. J. W. Schiede 178* (BM, G, NY, P, isotypes); Orizaba, 1856, *Mateo Botteri 475* (P), *482* (K); Cerro Punta Coscomat, May 10, 1937, *Eizi Matuda 1501* (MICH, type of *P. Matudai*; A, MO, NY, isotypes). INDEFINITE: without locality, 1865–1866, *M. Hahn s.n.* (K).

The Oaxacan collections have larger weaker inflorescences. In *Conzatti 2486* and *Hahn s.n.*, the leaf margin is conspicuously denticulate, but otherwise these collections agree rather closely with the type.

P. melanosticta, so rarely collected and poorly represented in herbaria, has been misinterpreted almost as widely as *P. serrulata* (Sw.) Mez.

Fig. 68. *Parathesis melanosticta* (Schlecht.) Hemsl. 1, Flowering branch; × ½. 2, Calyx; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from isotype, *C. J. W. Schiede 178* (P), by Vivien Frazier.

Plate 34. *Parathesis melanosticta* (Schlecht.) Hemsl. Flowering branch, *M. Botteri 482* (K).

Plate 35. *Parathesis melanosticta* (Schlecht.) Hemsl. Flowering branch. Isotype, *C. J. W. Schiede 178* (NY).

72. Parathesis Seibertii Lundell, Ann. Mo. Bot. Gard. 26: 293. 1939. Fig. 69.

P. Woodsoni Lundell, Ann. Mo. Bot. Gard. 28: 458. 1941.

A small tree up to 15 m. tall, branchlets slender to rather stout, apically ferruginous-lepidote with minute very closely appressed stellate hairs, these scarcely discernible; leaves with slender petioles usually 1–1.5 cm. long, sometimes up to 2.5 cm. long; leaf blades lanceolate, oblong-elliptic or oblanceolate, 5–20 cm. long, 1.5–5 cm. wide, acuminate at apex and base, chartaceous or membranaceous, obscurely crenulate to entire, at first minutely and sparsely lepidote beneath with appressed stellate hairs, conspicuously black-punctate, striolate, costa elevated beneath, the primary lateral veins very slender; inflorescences axillary, paniculate, up to 15 cm. long, long pedunculate, the peduncles and branches slender, 1- or 2-branched, sparsely and minutely puberulent; pedicels slender, 6.5–11 mm. long, minutely puberulent; flowers subcorymbose, minutely papillose-puberulent, up to 6 mm. long at anthesis; sepals triangular, up to 1.2 mm. long, red-black punctate; petals narrowly lanceolate, up to 6 mm. long, papillose-tomentose over entire inner surface, densely red-black punctate in lines; stamens 3–3.5 mm. long; filaments slender, glabrous, 1.5–2 mm. long, not punctate; anthers erect, dorsifixed one-third above base, lanceolate, 1.75–2.4 mm. long, attenuate apically and apiculate, epunctate or with one to several minute black glands dorsally; ovary puberulent or tomentulose to middle and at base of style or only apically; style slender, about 5 mm. long, punctate in lines; placenta depressed-globose, apiculate; ovules 7 9, uniseriate, enclosed; fruits purple, depressed-globose, drying about 7 mm. in diam.

PANAMA.—Chiriqui: Valley of upper R. Chiriqui Viejo, alt. 1300–1900 m., July 27, 1937, *Peggy & Gene White 27* (MICH, type; A, LL, MO, NY, isotypes), tree, 5–6 m., fls. pink with sweet odor; Rio Chiriqui Viejo valley, between El Volcan and Cerro Punta, Mar. 19, 1938, *Gene White 19* (F, MO), tree 10 ft., petals pink, fragrant; Volcan de Chiriqui, vicinity of Casita Alta, ca. 1500–2000 m., June 28–July 2, 1938, *R. E. Woodson, Jr., Paul H. Allen & R. J. Seibert 798* (A, K, MICH), tree 4 m., fls. pale pink, fruit purple-black, depressed spherically, 1.2 cm.; upper valley of Rio Chiriqui Viejo, trail from Paso Ancho to Monte Lirio, alt. 1500–2000 m., Jan. 16, 1939, *Paul H. Allen 1598* (GH, LL, MO, US), tree 10 m.; Finca Lerida to Peña Blanca, alt. 1750–2000 m., July 9, 1940, *R. E. Woodson, Jr. & R. W. Schery 331* (MICH, type of *P. Woodsoni*; GH, K, isotypes), tree, corolla pink, berries deep purple, patelliform; Cerro Punta, alt. 2000 m., May 24, 1946, *Paul H. Allen 3485* (F, G, MO, NY, S, UC, US), tree, 15 m., fls. pink.

Additional collections and field studies are needed to determine the status of *P. Woodsoni*, and for the present I am considering it a synonym. It differs in having pedicels up to 11 mm. long compared to 6.5 mm. in the type of *P. Seibertii*, its ovary is puberulent to below the middle, rather than tomentulose apically, and the anthers are mostly concolorous and caudate apically.

P. Seibertii appears to have affinity to *P. Moritziana* Mez.

73. Parathesis angustifolia Lundell, Wrightia 3: 79. 1963. Fig. 70.

P. macrophylla Rusby, ex Mez, Pflanzenreich IV. 236: 180. 1902, not *P. macrophylla* (Benth.) Britton, ex Rusby, Mem. Torrey Club 4: 217. 1895.

Branchlets rather slender, at first minutely ferruginous-tomentose, with fine appressed stellate hairs; leaves with slender petioles 1–2 cm. long; leaf blades

Fig. 69. *Parathesis Seibertii* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal and stamen; × 5. 4, Pistil; × 5. Illustrated from type, *Peggy & Gene White 27* (MICH), by Vivien Frazier.

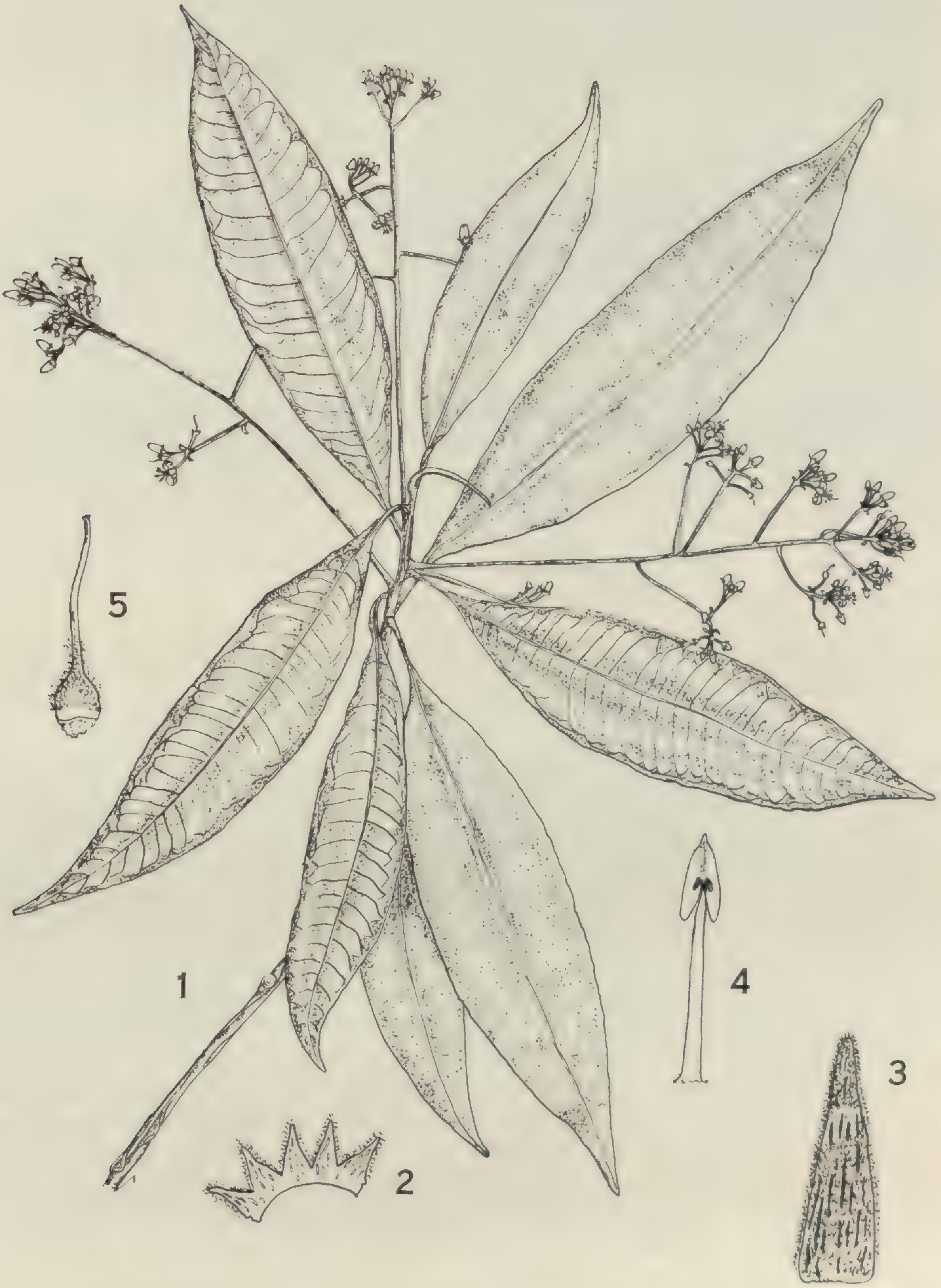


Fig. 70. *Parathesis angustifolia* Lundell. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Petal, inner surface; × 5. 4, Stamen; × 10. 5, Pistil; × 5. Illustrated from type, *Miguel Bang 861* (US), by Vivien Frazier.

narrowly lanceolate or oblong-lanceolate, 10.5–23 cm. long, 3–5 cm. wide, apex caudate-acuminate, base acuminate, decurrent, subchartaceous, irregularly undulate-crenulate, at first tomentulose on lower surface with minute ferruginous stellate appressed hairs, glabrescent, sparsely puberulent above at base and along petiole, the costa impressed above, elevated beneath, the primary lateral veins slender; inflorescences axillary, laxly pinnately paniculate, 8.5–15 cm. long, long pedunculate, minutely puberulent; pedicels slender, 5–7 mm. long, subtended by subulate bractlets; flowers corymbose, minutely ferruginous-puberulent, 5–6 mm. long at anthesis; sepals narrowly triangular, up to 1.4 mm. long, punctate with small reddish glands; petals lanceolate, 5–6 mm. long, papillose-tomentose over entire inner surface, punctate in lines with reddish glands; stamens about 3 mm. long; filaments 2 mm. long, glabrous; anthers small, lanceolate, 1–1.2 mm. long, apiculate, dorsifixed about one-third above base, with one to several small blackish glands dorsally; ovary ovoid, short villous-tomentulose, the hairs longer apically and at base of style, the style up to 3.5 mm. long; placenta depressed-obovoid, apiculate; ovules 7–9, uniseriate, enclosed.

BOLIVIA.—Songo, November, 1890, *Miguel Bang 861* (US, type; BM, F, G, GH, LL, MICH, MO, NY, isotypes).

The species, allied to *P. adenanthera* (Miq.) Hook.f., differs in its glabrous filaments and unusually narrow caudate leaves.

74. Parathesis Moritziana Mez, Pflanzenreich IV. 236: 180. 1902. Fig. 71.

Branchlets slender, very minutely ferruginous-puberulent at apex; leaves with slender petioles up to 2 cm. long; leaf blades lanceolate, elliptic-oblong or oblanceolate, 7.5–15 cm. long, 2.5–5.5 cm. wide, apex acuminate, base acute or acuminate, finely crenulate, membranaceous, at first rather sparingly pubescent on undersurface with minute appressed stellate hairs, puberulent above along costa at base, glabrescent early, costa slightly impressed above, elevated beneath, the primary lateral veins very slender; inflorescences open, lax, axillary, paniculate, usually 8–15 cm. long, sometimes up to 22 cm. long, long pedunculate, 1- or 2-branched, the peduncle and branches very slender, puberulent, the minute hairs simple or stellate and appressed, glabrescent; pedicels slender, 8–15 mm. long, apparently accrescent, minutely papillose-puberulent; flowers usually 5- rarely 4-parted, corymbose, puberulent, up to 5 mm. long at anthesis; sepals very narrowly triangular, appearing subulate, up to 1.5 mm. long; petals narrowly triangular-lanceolate, about 5 mm. long, orange-punctate, papillose-tomentose on inner surface; stamens 2–2.3 mm. long; filaments glabrous, up to 1.4 mm. long, slightly exceeding anthers; anthers small, erect, ovate, 1.2–1.4 mm. long, acute, dorsifixed about one-fourth above base, with conspicuous orange-punctate area dorsally; ovary ovoid, puberulent below, short villous-tomentulose apically and at base of style; style about 3.5 mm. long; placenta subglobose; ovules few, 3–6, erect, uniseriate.

VENEZUELA.—Indefinite: prope coloniam Tovar, 6500 ft., 1854–1855, *A. Fendler 754* (GH, lectotype; MO, isotype), fl. white; prope coloniam Tovar, 1854–1855, *A. Fendler 755* (GH, K); prope coloniam Tovar, 1856–1857, *A. Fendler 754* (G, GH, K); Colonia Tovar, *J. W. K. Moritz 900* (BM), fl. Aug.; Colonia Tovar, *J. W. K. Moritz 1698* (K), fl. June.

Fig. 71. *Parathesis Moritziana* Mez. 1, Flowering branch; × ½. 2, Calyx, spread out; × 5. 3, Flower; × 5. 4, Pistil; × 5. Illustrated from lectotype, *A. Fendler 754* (GH), by Vivien Frazier.

All of these collections were cited by Mez in the original description. The orange-punctate flowers, and the small ovate orange-punctate anthers scarcely more than 1 mm. long are unusual. The species bears some resemblance to *P. Rekoi* Standl. and *P. macronema* Bullock of Mexico.

Fendler 754 includes specimens collected in 1854–55 and 1856–57. I have designated the 1854–55 collection as the lectotype (GH) with one isotype (MO).

List of Specimens Cited and Annotated[5]

Abbott, William Louis.
1449 *P. crenulata.*
2032 *P. crenulata.*
2411 *P. crenulata.*

Aguilar, Jose Ignacio.
130 *P. guatemalensis.*
503 *P. chiapensis.*
793 *P. stenophylla.*
1345 *P. tartarea.*

Aguilar H., Mercedes.
354 *P. cubana.*

Alain, Brother.
9 *P. cubana.*
699 *P. cubana.*
1834 *P. cubana.*
3884 *P. cubana.*
4403 *P. cubana.*

Allen, Paul H.
550 *P. glabra.*
1352 *P. glabra.*
1598 *P. Seibertii.*
3485 *P. Seibertii.*

Allen, Paul H., Robert Armour, and Alphonse Chable.
6122 *P. vulgata.*

Allen, Paul H., and Mario Lewy van Severen.
7310 *P. aurantiaca.*

Baker, Bryant O.
2150 *P. cubana.*
2158 *P. cubana.*

Baker, Bryant O., and O'Donovan.
4073 *P. cubana.*

Bang, Miguel.
861 *P. angustifolia.*

Bartlett, H. H.
11271 *P. cubana.*
11573 *P. cubana.*
12365 *P. cubana.*
12794 *P. cubana.*
13140 *P. membranacea.*
17326 *P. crenulata.*

Bernardi, A. L.
1269 *P. venezuelana.*
6244 *P. venezuelana.*

Bernoulli, Carl Gustav, and Rich. Cario.
1980 *P. vestita.*
1985 *P. columnaris.*
1988 *P. columnaris.*

Botteri, Mateo.
475 *P. melanosticta.*
482 *P. melanosticta.*
910 *P. elliptica.*

Bourgeau, M.
1580 *P. psychotrioides.*
2252 *P. psychotrioides.*
2450 *P. oblongifolia.*
7531 *P. oblongifolia.*

Bravo H., Helia.
53 *P. psychotrioides.*
s.n. (MEXU) *P. brevipes.*

Breedlove, D. E.
6193 *P. chiapensis.*
6349 *P. Donnell-Smithii.*
7413 *P. chiapensis.*

Brenes, Alberto M.
5452 *P. aeruginosa.*
14388 *P. aeruginosa.*

Britton, E. G.
10033 *P. cubana.*

Britton, N. L., and E. G. Britton.
7855 *P. crenulata.*
8105 *P. crenulata.*

Britton, N. L., E. G. Britton, and Margaret S. Brown.
6381 *P. crenulata.*

---

[5] Some of the older collections with no locality data are listed here, but not cited under the species. All of the specimens studied of the collections listed have been annotated, and their location is designated where cited by standard symbols of the respective herbaria.

Britton, N. L., E. G. Britton, F. S. Earle, and O. S. Gager.
6311 *P. cubana.*
6358 *P. cubana.*
6648 *P. cubana.*
Britton, N. L., and John F. Cowell.
932 *P. crenulata.*
Britton, N. L., W. E. Hess, and Delia W. Marble.
2868 *P. crenulata.*
Cardenas, Martin.
1967 *P. adenanthera.*
Cardenas, R.
324 *P. brevipes.*
Carlson, Margery C.
2007 *P. chiapensis.*
Charles, Brother.
4999 *P. cubana.*
Clark, Ora M.
6879 *P. brevipes.*
Contreras, Elias.
223 *P. cubana.*
538 *P. cubana.*
575 *P. cubana.*
1428 *P. cubana.*
1649 *P. cubana.*
1880 *P. cubana.*
2103 *P. cubana.*
2236 *P. cubana.*
2403 *P. oblanceolata.*
2408 *P. oblanceolata.*
2737 *P. cubana.*
2864 *P. cubana.*
3321 *P. cubana.*
3451 *P. cubana.*
4216 *P. sessilifolia.*
4280 *P. sessilifolia.*
4464 *P. belizensis.*
4542 *P. sessilifolia.*
4645 *P. sessilifolia.*
4852 *P. cubana.*
5057 *P. calophylla.*
5071 *P. calophylla.*
5095 *P. calophylla.*
5147 *P. leptopa.*
5186 *P. calophylla.*
5189 *P. leptopa.*
5236 *P. sessilifolia.*
5333 *P. sessilifolia.*
5390 *P. sessilifolia.*
Conzatti, Cassiano.
1695 *P. cubana.*
2486 *P. melanosticta.*
3700 *P. psychotrioides.*
Conzatti, Cassiano, and Blas Pablo Reko.
3285 *P. Conzattii.*
Cook, O. F.
248 *P. pleurobotryosa.*
Cook, O. F., and C. B. Doyle.
377 *P. fusca.*
Cook, O. F., and R. F. Griggs.
687 *P. oblanceolata.*
Cooper, G. P., and G. M. Slater.
153 *P. panamensis.*
Cuatrecasas, Jose.
15426 *P. adenanthera.*
18600 *P. adenanthera.*
Cuesta, Eugenio.
s.n. (NY) *P. cubana.*
Davidson, M. E.
379 *P. glabra.*
907 *P. glabra.*
Davis, L. Irby, and Edgar Kincaid.
55–50 *P. latifolia.*
55–56 *P. chiapensis.*
55–78 *P. chiapensis.*
Dodge, C. W., and V. F. Goerger.
s.n. (1936) *P. glabra.*
Dressler, Robert L.
1508 *P. brevipes.*
Dressler, Robert L., and Quentin Jones.
107 *P. cubana.*
Dryander, E.
2326 *P. fusca.*
2341 *P. fusca.*
2348 *P. fusca.*
Duke, J. A.
3880 *P. fusca.*
Earle, F. S.
735 *P. cubana.*
Earle, F. S., and P. Wilson.
1534 *P. cubana.*
Echeverria, Jose Antonio.
358 *P. calophylla.*

Edwards, Mary Taylor.
523 *P. brevipes.*
631 *P. brevipes.*
Eggers, H. F. A.
1006 *P. crenulata.*
1240 *P. crenulata.*
2100 *P. crenulata.*
14240 *P. Eggersiana.*
Egler, Frank E.
42–190 *P. cubana.*
Ekman, E. L.
H. 189 *P. parvifolia.*
3422 *P. serrulata.*
3776 *P. serrulata.*
4375 *P. serrulata.*
10466 *P. cubana.*
H12417 *P. crenulata.*
Emrick, G. M.
30 *P. brevipes.*
51 *P. mexicana.*
234 *P. mexicana.*
Endres, M.
231 *P. aeruginosa.*
Estrada, Tito Perez.
s.n. (F) *P. chrysophylla.*
Fendler, A.
754 (1854–55) *P. Moritziana.*
754 (1856–57) *P. Moritziana.*
755 *P. Moritziana.*
Fisher, Geo. L.
45182 *P. brevipes.*
Fuertes, Padre Miguel.
64 *P. crenulata.*
454 *P. crenulata.*
Funck, N., and L. J. Schlim.
801 *P. venezuelana.*
Galeotti, H.
1718 *P. cubana.*
1719 (P) *P. Rekoi.*
1719 (G) *P. melanosticta.*
1720 *P. oxyphylla.*
7108 *P. oblongifolia.*
7248 *P. cubana.*
Galusser, Carlos.
3 *P. chrysophylla.*
Gentle, Percy H.
195 *P. cubana.*
874 *P. cubana.*
2443 *P. Donnell-Smithii.*
2615 *P. Donnell-Smithii.*
2779 *P. belizensis.*
4098 *P. cubana.*
4649 *P. rufa.*
7324 *P. sessilifolia.*
8017 *P. cubana.*
8444 *P. sessilifolia.*
8700 *P. sessilifolia.*
8901 *P. sessilifolia.*
9376 *P. cubana.*
9755 *P. cubana.*
Gentry, H. S., and C. L. Gilly.
10670 *P. prionophylla.*
Glassman, S. F.
1616 *P. vulgata.*
1686 *P. vulgata.*
Goll, George P.
262 *P. sessilifolia.*
Gonzalez, V., and Cassiano Conzatti.
772 *P. melanosticta.*
1257 *P. melanosticta.*
Goudot, Justin.
s.n. (1844, P) *P. adenanthera.*
s.n. (G, K, P) *P. adenanthera.*
Grant, Verne.
574 *P. columnaris.*
Greenman, J. M.
159 *P. psychotrioides.*
Gregory, L. E.
223 *P. crenulata.*
Hagen, Christine von, and Wolfgang von Hagen.
1240 *P. hondurensis.*
1328 *P. belizensis.*
Hahn, M.
s.n. (P) *P. brevipes.*
s.n. (K) *P. melanosticta.*
Hanbury-Tracy, J.
450 *P. reticulata.*
Hartweg, Karl Theodor.
s.n. (K) *P. adenanthera.*
Haught, Oscar.
4236 *P. reticulata* var. *sinuata.*
Hayes, Sutton.
207 *P. microcalyx.*
706 *P. microcalyx.*
Heller, A. A. and Mrs. A. A. Heller.
1399 *P. crenulata.*

Helmrich, H.
1693 *P. leptopa.*
Hernandez X., Efraim.
224 *P. columnaris.*
Heyde, Enrico Teophilo.
304 *P. calophylla.*
Heyde, Enrico Teophilo, and Ernesto Lux.
2909 *P. calophylla.*
4535 *P. leptopa.*
4535A *P. reflexa.*
Hicks, V. M., and Chester M. Rowell, Jr.
3576 *P. brevipes.*
Hinton, Geo. B.
184 *P. villosa.*
597 *P. villosa.*
600 *P. villosa.*
3144 *P. psychotrioides.*
3611 *P. villosa.*
3679 *P. villosa.*
4051 *P. villosa.*
4110 *P. villosa.*
7190 *P. villosa.*
7683 *P. villosa.*
8617 *P. psychotrioides.*
8753 *P. psychotrioides.*
10402 *P. macronema.*
10769 *P. tetramera.*
10779 *P. tetramera.*
10803 *P. macronema.*
11807 *P. villosa.*
13717 *P. villosa.*
13721 *P. villosa.*
13795 *P. mexicana.*
14150 *P. macronema.*
14164 *P. villosa.*
Hioram, Brother.
s.n. (1914) *P. crenulata.*
Hitchcock, A. S.
s.n. (F) *P. cubana.*
Hitchcock, C. L., and L. R. Stanford.
6948 *P. brevipes.*
Holm, Richard W., and Hugh H. Iltis.
20 *P. fusca.*
Holton, I. F.
615 *P. fusca.*
Hottle, W. D.
96 *P. chrysophylla.*
Howard, R., W. Briggs, P. Kamb, I. Lane, and R. Ritland.
665 *P. Donnell-Smithii.*
Jahn, Alfredo.
210 *P. fusca.*
Johnson, E. P.
123 *P. oblongifolia.*
Johnston, J. R.
1353 *P. reflexa.*
Johnston, J. R., and H. B. Cowgill.
203 *P. crenulata.*
Juergensen, C.
73 *P. Rekoi.*
203 *P. oxyphylla.*
611 *P. cubana.*
s.n. (G) *P. tenuis.*
Karling, J. S.
29 *P. cubana.*
Kenoyer, Leslie A.
C193 *P. brevipes.*
970 *P. brevipes.*
979 *P. brevipes.*
Kernan, H. S.
136 *P. reticulata.*
Killip, E. P.
32242 *P. cubana.*
Killip, E. P. and Albert C. Smith.
20421 *P. venezuelana.*
23912 *P. adenanthera.*
25392 *P. adenanthera.*
Langlasse, E.
963 *P. obtusa.*
967 *P. macronema.*
Lawrence, A. E.
372 *P. adenanthera.*
Leavenworth, Wm. C. and Mrs. Wm. C. Leavenworth.
897 *P. brevipes.*
Leavenworth, Wm. C., and H. Hoogstraal.
1068 *P. villosa.*
Lechler, W.
2473 *P. adenanthera.*
Lehmann, F. C.
1420 *P. leptopa.*
1426 *P. pleurobotryosa.*
5800 *P. fusca.*
7346 *P. reticulata.*
7515 *P. Candolleana.*

Leon, Brother, and Brother Charles.
4954 *P. cubana.*
Leon, Brother, and Brother Hioram.
4369 *P. cubana.*
Leon, Brother, and E. P. Killip.
14704 *P. cubana.*
Leon, Brother, and W. Seifriz.
18207 *P. serrulata.*
Levy, P.
478 *P. trichogyne.*
Liebmann, F. M.
10 *P. Oerstediana.*
10A *P. Oerstediana.*
12 *P. oblongifolia.*
13 (1841) *P. oblongifolia.*
13 (1842) *P. oblongifolia.*
14 *P. tenuis.*
15349 *P. Oerstediana.*
15350 *P. Oerstediana.*
15351 *P. Oerstediana.*
s.n. (P) *P. brevipes.*
s.n. (MO) *P. oblongifolia.*
Linden, J. J.
237 *P. laxa.*
282 *P. venezuelana.*
397 *P. brevipes.*
s.n. (G) *P. cubana.*
Little, Elbert L. Jr.
6027 *P. glabra.*
Lundell, C. L.
32 *P. cubana.*
33 *P. cubana.*
63 *P. cubana.*
68 *P. cubana.*
479 *P. cubana.*
977 *P. cubana.*
2480 *P. cubana.*
3057 *P. cubana.*
3112 *P. cubana.*
3606 *P. cubana.*
4909 *P. cubana.*
6739 *P. cubana.*
12227 *P. brevipes.*
15519 *P. cubana.*
15979 *P. cubana.*
16050 *P. cubana.*
16227 *P. cubana.*
16269 *P. sessilifolia.*
16269A *P. oblanceolata.*
16414 *P. cubana.*
16756 *P. cubana.*
17017 *P. cubana.*
17196 *P. cubana.*
17816 *P. Donnell-Smithii.*
17817 *P. Donnell-Smithii.*
17822 *P. Donnell-Smithii.*
18134 *P. cubana.*
Lundell, C. L., and Amelia A. Lundell.
7136 *P. brevipes.*
12419 *P. brevipes.*
Macbride, J. Francis.
5519 *P. adenanthera.*
5604 *P. adenanthera.*
Martinez-Calderon, G.
16 *P. Donnell-Smithii.*
Matuda, Eizi.
1501 *P. melanosticta.*
1851 *P. columnaris.*
2270 *P. oblongifolia.*
3265 *P. cubana.*
3391 *P. sessilifolia.*
4293 *P. calophylla.*
4297 *P. leptopa.*
4416 *P. chiapensis.*
4555 *P. calophylla.*
4720 *P. chiapensis.*
5036 *P. subcoriacea.*
5355 *P. reflexa.*
5520 *P. reflexa.*
5835 *P. chiapensis.*
5985 *P. subcoriacea.*
15355 *P. reflexa.*
15520 *P. reflexa.*
15835 *P. chiapensis.*
16406 (1946) *P. columnaris.*
16406 (1947) *P. columnaris.*
16468 *P. columnaris.*
16704 *P. columnaris.*
17679 *P. subcoriacea.*
17806 *P. leptopa.*
30865 *P. chiapensis.*
Maxon, William R., and Alfred D. Harvey.
8144 *P. glabra.*
Maxon, William R., and Robert Hay.
3499 *P. columnaris.*
McVaugh, Rogers.
10159 *P. villosa.*

10253 *P. villosa.*
13995 *P. villosa.*
14285 *P. villosa.*
15021 *P. rosea.*
15975 *P. ferruginea.*
19160 *P. ferruginea.*

McVaugh, Rogers, and Walter N. Koelz.
527 *P. ferruginea.*

Merrill, E. D., Louis O. Williams, and Antonio Molina R.
15649 *P. vulgata.*

Mexia, Ynes.
1325 *P. villosa.*
8286 *P. adenanthera.*
9161 *P. Oerstediana.*

Meyer, F. G., and D. J. Rogers.
2854 *P. brevipes.*

Mohr, Charles.
131 *P. oblongifolia.*

Molina R., Antonio.
202 *P. vulgata.*
2321 *P. fusca.*
2449 *P. Rothschuhiana.*
2468 *P. trichogyne.*
2813 *P. hondurensis.*
2826 *P. trichogyne.*
2859 *P. trichogyne.*
3160 *P. vulgata.*
3761 *P. guatemalensis.*
6268 *P. vulgata.*
6395 *P. vulgata.*
6647 *P. chrysophylla.*
6775 *P. chrysophylla.*
6830 *P. hondurensis.*
6865 *P. fusca.*
7003 *P. guatemalensis.*
7125 *P. chrysophylla.*
7228 *P. vulgata.*
7842 *P. guatemalensis.*
7880 *P. vulgata.*

Molina R., Antonio, and Albertina R. Molina.
12182 *P. guatemalensis.*
12311 *P. leptopa.*
12435 *P. reflexa.*
12576 *P. acuminata.*

Morales.
942 *P. leptopa.*

Moritz, J. W. K.
900 *P. Moritziana.*
1698 *P. Moritziana.*

Morton, C. V.
4355 *P. cubana.*

Muenscher, W. C.
12382 *P. columnaris.*

Müller, Fred.
1382 *P. oblongifolia.*

Mutis, Jose Celestino.
180 *P. venezuelana.*
474 *P. adenanthera.*
3445 *P. venezuelana.*
4972 *P. venezuelana.*

Nash, George V.
435 *P. serrulata.*

Nash, George V., and Norman Taylor.
1113 *P. serrulata.*

Nelson, E. W.
3045 *P. rufa.*
3283 *P. brevipes.*
3800 *P. reflexa.*
7053 *P. villosa.*

O'Donovan.
5205 *P. cubana.*
5312 *P. cubana.*

Oersted, A. S.
37 *P. fusca.*
37A *P. Rothschuhiana.*

Ortega, Jesus Gonzalez.
52 *P. prionophylla.*
5369 *P. villosa.*

Padilla, Sisto Alberto.
553 *P. columnaris.*

Palmer, Edward.
666 *P. brevipes.*
1988 *P. prionophylla.*
1988A *P. ferruginea.*

Pearce, R.
s.n. (1866) *P. adenanthera.*

Peck, M. E.
918 *P. rufa.*

Pennell, Francis W., Ellsworth P. Killip, and Tracy E. Hazen.
8501 *P. fusca.*

Pittier, H.
169 *P. sessilifolia.*
1646 *P. reticulata.*
5927 *P. laxa.*

7591 *P. microcalyx.*
13410 *P. microcalyx.*

Poeppig, E. F.
1667 *P. adenanthera.*

Poiteau, A.
s.n. (G) *P. crenulata.*
s.n. (G) *P. serrulata.*

Popenoe, Hugh.
48 *P. cubana.*

Prenleloup, L. A.
318 *P. crenulata.*

Pringle, C. G.
3101 *P. brevipes.*

Proctor, George R.
25110 *P. guatemalensis.*
25227 *P. leptopa.*
25437 *P. calophylla.*
25438 *P. calophylla.*
25448 *P. leptopa.*
25532 *P. Skutchii.*

Purdie, Wm.
s.n. (1845) *P. venezuelana.*
s.n. (GH, K) *P. reticulata.*

Purpus, C. A.
23 *P. subulata.*
154 *P. macronema.*
310 *P. macronema.*
1953 *P. brevipes.*
7021 *P. lanceolata.*
7095 *P. lanceolata.*
7334 *P. reflexa.*
7335 *P. tartarea.*
7371 *P. lanceolata.*
9273 *P. macronema.*
10023 *P. macronema.*
10310 *P. macronema.*
10716 *P. oblongifolia.*
s.n. (1904) *P. psychotrioides.*
s.n. (1906) *P. oblongifolia.*

Record, S. J.
G.3 *P. chrysophylla.*
G.16 *P. chrysophylla.*
G.44 *P. tomentosa.*

Reko, Blas Pablo.
3335 *P. Rekoi.*

Rodriguez, Juvenal Valerio.
774 *P. vulgata.*
1789 *P. vulgata.*
2114 *P. hondurensis.*

Rodriguez C., R. L.
489 *P. glabra.*

Rose, J. N.
3331 *P. ferruginea.*

Rothschuh, E.
531 *P. Rothschuhiana.*

Ruiz, H., and J. Pavon.
s.n. (K) *P. adenanthera.*

Sagra, Ramon de la
s.n. (G, P) *P. cubana.*

Salazar, F.
s.n. (Mar. 1913) *P. brevipes.*
s.n. (Nov. 1913) *P. brevipes.*
s.n. (Apr. 1914) *P. melanosticta.*

Santos, Jose Vera.
2763 *P. psychotrioides.*
2829 *P. psychotrioides.*
2972 *P. oblongifolia.*
3016 *P. brevipes.*

Sargent, F. H.
A48 *P. crenulata.*

Schiede, C. J. W.
178 *P. melanosticta.*
s.n. (P) *P. oblongifolia.*

Schipp, W. A.
S-121A *P. sessilifolia.*
S-405 *P. rufa.*
S-405A *P. sessilifolia.*
415 *P. cubana.*

Schlim, L. J.
146 *P. venezuelana.*
707 (P) *P. reticulata.*
707 (F, G) *P. reticulata* var. *sinuata.*

Schomburgk, Robert.
s.n. (1873) *P. crenulata.*

Schultes, Richard Evans, and Blas Pablo Reko.
862 *P. Schultesii.*
865 *P. tenuis.*

Seemann, B. C.
1611 *P. fusca.*

Seifriz, William.
64 *P. reticulata.*
543 *P. reticulata.*

Seler, Caec., and Ed.
2226 *P. chiapensis.*
3134 *P. chiapensis.*
3365 *P. papillosa.*

Shafer, J. A.
273 *P. cubana.*
10369 *P. cubana.*
11156 *P. cubana.*
11689 *P. cubana.*
11763 *P. cubana.*
11836 *P. cubana.*

Shafer, J. A., and Brother Leon.
13593 *P. cubana.*

Shank, Paul J.
85 *P. trichogyne.*

Shank, Paul J., and Antonio Molina R.
4526 *P. microcalyx.*
4621 *P. microcalyx.*
4699 *P. microcalyx.*
4704 *P. fusca.*
4809 *P. microcalyx.*
4821 *P. microcalyx.*
4985 *P. microcalyx.*

Sintenis, P.
329 *P. crenulata.*
1457 *P. crenulata.*
2043 *P. crenulata.*
2402 *P. crenulata.*
4244 *P. crenulata.*
4473 *P. crenulata.*

Skutch, Alexander F.
307 *P. leptopa.*
377 *P. leptopa.*
898 *P. vestita.*
1159 *P. calophylla.*
1287 *P. columnaris.*
1681 *P. Skutchii.*
1810 *P. Donnell-Smithii.*
3857 *P. fusca.*
4696 *P. fusca.*

Smith, Austin.
A253 *P. macrantha.*
H500 *P. macrantha.*
NY682 *P. glabra.*
896 *P. crassiramea.*
P2179 *P. glabra.*
P2363 *P. aeruginosa.*
P2562 *P. trichogyne.*
P2633 *P. glabra.*
4131 *P. glabra.*

Smith, C. E. Jr., F. A. Peterson, and Narcisso Tejeda.
4149 *P. melanosticta.*

Smith, Herbert H.
444 *P. emarginata.*
444 *P. reticulata* var. *sinuata.*
1724 *P. reticulata* var. *sinuata.*
1725 *P. reticulata.*
1726 *P. pyramidalis.*

Smith, John Donnell.
1330 *P. columnaris.*
1489 *P. columnaris.*
1537 *P. guatemalensis.*
1706 *P. Skutchii.*
2117 *P. columnaris.*
4883 *P. fusca.*
6642 *P. microcalyx.*

Spruce, R.
s.n. (K) *P. adenanthera.*

Standley, Paul C.
198 *P. hondurensis.*
7797 *P. chrysophylla.*
8816 *P. trichogyne.*
8996 *P. fusca.*
19805 *P. hondurensis.*
20697 *P. vulgata.*
21073 *P. guatemalensis.*
28273 *P. vulgata.*
29349 *P. fusca.*
29365 *P. fusca.*
34144 *P. glabra.*
35725 *P. glabra.*
41671 *P. glabra.*
41869 *P. glabra.*
42063 *P. glabra.*
42385 *P. glabra.*
50508 *P. chrysophylla.*
56795 *P. chrysophylla.*
60058 *P. reflexa.*
61972 *P. reflexa.*
62226 *P. Donnell-Smithii.*
62298 *P. vestita.*
63600 *P. columnaris.*
66897 *P. columnaris.*
67144 *P. vestita.*
67943 *P. vestita.*
68151 *P. vestita.*
68219 *P. vestita.*
68446 *P. vestita.*
68771 *P. columnaris.*

68903 *P. vestita.*
68913 *P. columnaris.*
68927 *P. columnaris.*
68944 *P. vestita.*
68965 *P. vestita.*
68972 *P. columnaris.*
69364 *P. Donnell-Smithii.*
69418 *P. guatemalensis.*
69897 *P. vulgata.*
70239 *P. Donnell-Smithii.*
78967 *P. columnaris.*
83628 *P. vestita.*
84964 *P. vestita.*
85041 *P. vestita.*
85587 *P. vestita.*
86610 *P. vestita.*
86613 *P. columnaris.*
86658 *P. vestita.*
87131 *P. vestita.*
87365 *P. columnaris.*
89725 *P. Donnell-Smithii.*
90082 *P. guatemalensis.*
90261 *P. guatemalensis.*
91655 *P. sessilifolia.*
91791 *P. Donnell-Smithii.*
91811 *P. guatemalensis.*
92564 *P. leptopa.*
92586 *P. leptopa.*
92617 *P. leptopa.*

Standley, Paul C., and Jaime Chacon P.

6691 *P. guatemalensis.*

Standley, Paul C., and Juvenal Valerio.

49856 *P. adenanthera.*

Standley, Paul C., Louis O. Williams, and Antonio Molina R.

8016 *P. vulgata.*

Standley, Paul C., Louis O. Williams, Antonio Molina R., and Jaime Chacon P.

7003 *P. chrysophylla.*

Steere, W. C.

1785 *P. cubana.*

Stern, W. L., K. L. Chambers, J. D. Dwyer, and J. E. Ebinger.

571 *P. microcalyx.*

Steyermark, Julian A.

29800 *P. vulgata.*
30793 *P. vulgata.*
31073 *P. vulgata.*
31236 *P. Donnell-Smithii.*
31484 *P. vulgata.*
31961 *P. vulgata.*
32651 *P. vulgata.*
33205 *P. columnaris.*
33327 *P. vestita.*
33691 *P. vestita.*
35806 *P. tartarea.*
36023 *P. tartarea.*
37023 *P. reflexa.*
38513 *P. sessilifolia.*
39666 *P. cubana.*
39668 *P. cubana.*
39917 *P. belizensis.*
42210 *P. guatemalensis.*
43025 *P. vestita.*
43563 *P. calophylla.*
43689 *P. calophylla.*
44334 *P. Donnell-Smithii.*
44599 *P. sessilifolia.*
45153A *P. cubana.*
45801 *P. sessilifolia.*
45853 *P. oblanceolata.*
46629 *P. vestita.*
46754 *P. tartarea.*
46957 *P. tartarea.*
47367 *P. vestita.*
47606 *P. tartarea.*
47653 *P. columnaris.*
48551 *P. calophylla.*
48776 *P. papillosa.*
48829 *P. subulata.*
49126 *P. calophylla.*
49193 *P. Donnell-Smithii.*
49714 *P. subulata.*
49862 *P. calophylla.*
49960 *P. calophylla.*
49994 *P. Skutchii.*
50720 *P. chiapensis.*
51746 *P. chiapensis.*
51883 *P. calophylla.*
55950 *P. venezuelana.*
56361 *P. venezuelana.*

Stork, H. E.

2422 *P. glabra.*
2560 *P. glabra.*

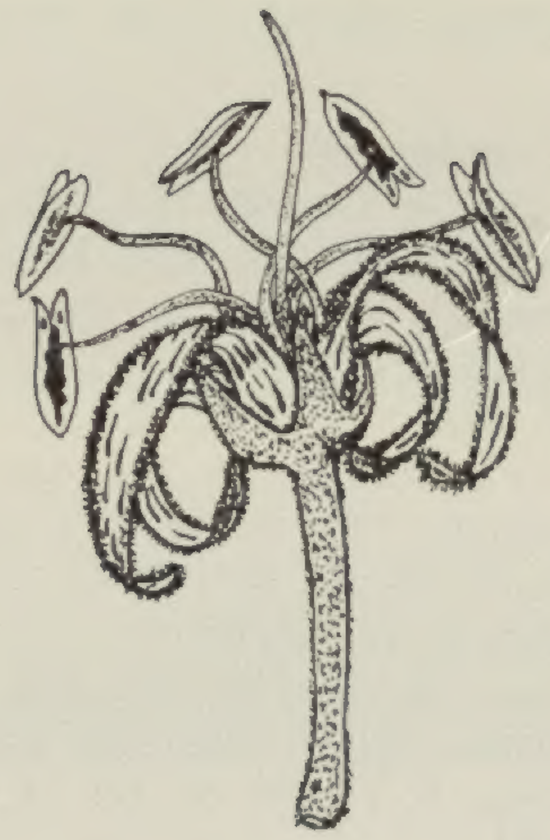
Stricker, R.

227 *P. columnaris.*

Swartz, O.
s.n. (S) *P. serrulata.*
Taylor, N.
49 *P. crenulata.*
Teran, Luis Ruiz.
1548 *P. Agostiniana.*
Tonduz, Adolfo.
4080 *P. fusca.*
11714 *P. glabra.*
12839 *P. microcalyx.*
17659 *P. aeruginosa.*
Toro, P.
s.n. (MEXU) *P. elliptica.*
Toro, Rafael A.
1363 *P. adenanthera.*
Triana, J. J.
2581 *P. Candolleana.*
4222 *P. fusca.*
Tucker, John M.
1058 *P. aurantiaca.*
Tuerckheim, H. von
II 275 *P. Donnell-Smithii.*
921 *P. papillosa.*
II 1202
(June, 1906) *P. guatemalensis.*
II 1202
(Aug. 1906) *P. guatemalensis.*
1442 *P. pleurobotryosa.*
1443 *P. sessilifolia.*
3510 *P. crenulata.*
7919 *P. Donnell-Smithii.*
8430 *P. Donnell-Smithii.*
8706 *P. sessilifolia.*
Ule, E.
9686 *P. amazonica.*
Underwood, L. M., and R. F. Griggs.
402 *P. crenulata.*
890 *P. crenulata.*
Uribe, Lorenzo Uribe.
1552 *P. adenanthera.*
Valerio, Manual.
1190 *P. adenanthera.*
Valeur, E. J.
579 *P. serrulata.*
882 *P. serrulata.*
1023 *P. serrulata.*
Van Hermann, H. A.
260 *P. cubana.*
269 *P. cubana.*
593 *P. cubana.*
710 *P. cubana.*
808 *P. cubana.*
s.n. (NY) *P. cubana.*
Vines, Robert A.
338 *P. brevipes.*
Weaver, J. N.
662 *P. brevipes.*
Werckle, Carlos.
s.n. (US) *P. glabra.*
White, Gene.
19 *P. Seibertii.*
58 *P. glabra.*
White, Peggy.
156 *P. glabra.*
White, Peggy and Gene White.
27 *P. Seibertii.*
Wilbur, R. L. and C. R. Wilbur.
1562 *P. ferruginea.*
1862 *P. villosa.*
Williams, Louis O., and Antonio Molina R.
10012 *P. vulgata.*
10377 *P. vulgata.*
10384 *P. vulgata.*
11084 *P. vulgata.*
11085 *P. vulgata.*
11849 *P. vulgata.*
12086 *P. vulgata.*
12144 *P. vulgata.*
12340 *P. guatemalensis.*
12618 *P. vulgata.*
12666 *P. guatemalensis.*
12748 *P. vulgata.*
12776 *P. vulgata.*
17947 *P. guatemalensis.*
Williams, Louis O., Antonio Molina R., and Terua P. Williams.
23275 *P. vulgata.*
23377 *P. vulgata.*
25680 *P. vestita.*
25691 *P. vestita.*
26274 *P. vestita.*
Williams, Louis O., and Terua P. Williams.
18801 *P. guatemalensis.*
Williams, R. S.
452 *P. adenanthera.*
719 *P. microcalyx.*

Winzerling, H. W.
s.n. (Y) *P. chrysophylla.*
Woodson, R. E. Jr., Paul H. Allen, and R. J. Seibert.
798 P. Seibertii.
Woodson, R. E. Jr., and R. W. Schery.
331 P. Seibertii.
384 P. glabra.
Wright, C.
2910 P. cubana.
Wright, C., C. C. Parry, and H. Brummel.
236 P. crenulata.
Yuncker, T. G., R. F. Dawson, and H. R. Youse.
5890 P. guatemalensis.
6314 P. vulgata.

Index



Valid names are in roman type, synonyms are in *italics*. The page cited in **bold-face** type indicates the place of principal treatment.

Ardisia
adenanthera, 177
chiapensis, 174
Conzattii, 141
crenulata, 113, 116
cubana, 92, 94
ferruginea, 56
ferruginea var. *macrophylla*, 175, 177
fusca, 118
fusca var. *glabrata*, 100
melanosticta, 183
serrulata, 7, 48

Camaco, 27
Capulin, 36
Capulincillo, 71
Capulincillo de faisan, 44
Cerecita, 36
Cerezin, 36
Cerezo silvestre, 36
Chimiche, 157
Cinco negritos, 36, 137
Cuxma, 166
Cuya, 27

Fruta de pava, 111

Guaketun, 82

Huesito blanco, 125
Hueso blanco, 125

Ixpanol, 93

Jalapago, 116

Lichui, 134

Ma-ku-lai, 166
Manteco, 146
Manzanita, 140
Mora pava, 149

Palo de uva, 82
Parathesis
acuminata, 2, 8, 12, **27**, 28
acutissima, 1
adenanthera, 3, 4, 11, 21, 175, **177**, 178, 179, 190
aeruginosa, 8, 14, **59**, 60, 61
Agostiniana, 9, 16, **97**, 99
amazonica, 8, 14, **56**, 57
angustifolia, 12, 22, **187**, 189
aurantiaca, 11, 20, **153**, 154, 155
belizensis, 8, 14, **56**, 58, 61
brevipes, 9, 15, **74**, 75, 76, 77, 83
calophylla, 10, 19, **134**, 135, 136, 137
Candolleana, 11, 21, **175**, 176
chiapensis, 3, 8, 13, 14, **40**, 41, 42, 44, 174
chrysophylla, 8, 12, **24**, 25, 26
columnaris, 8, 13, **32**, 34, 35, 36, 101, 108
Conzattii, 10, 19, **141**, 142
corymbosa, 2, 92, 94
crassiramea, 3, 9, 14, **64**, 65, 66
crenulata, 10, 18, 71, **113**, 114, 115, 116
cubana, 2, 3, 4, 9, 16, **87**, 90, 91
Donnell-Smithii, 3, 9, 15, **77**, 78, 79, 80, 81, 83
Eggersiana, 3, 8, 14, **53**, 54, 55
elliptica, 9, 15, **71**, 72, 73, 74
emarginata, 9, 15, **83**, 84, 85, 111
ferruginea, 9, 17, 44, 56, **106**, 107
fusca, 10, 18, 101, **118**, 119, 120, 121
glabra, 2, 4, 11, 20, **151**, 152, 153
guatemalensis, 9, 15, **85**, 86, 87
Hintonii, 174
hondurensis, 3, 9, 16, 17, **104**, 105, 106
lanceolata, 9, 16, 17, 36, **101**, 102
latifolia, 3, 11, 20, **162**, 163
laxa, 9, 16, 17, **101**, 103, 104

Parathesis (*continued*)
leptopa, 11, 19, 21, **164**, 165, 166
macrantha, 11, 20, **149**, 150, 151
macronema, 3, 11, 21, **174**, 175, 192
macrophylla, 177, 187
Matudai, 183
melanosticta, 12, 21, 74, **183**, 184, 185, 186
membranacea, 10, 18, **116**, 117, 123
mexicana, 9, 16, **97**, 98
microcalyx, 9, 15, **67**, 68
Moritziana, 12, 22, 187, **190**, 191
oblanceolata, 10, 18, **121**, 122, 123
oblongifolia, 9, 15, 16, **67**, 69, 70, 71
obovata, 92
obtusa, 9, 14, **61**, 63, 64
Oerstediana, 10, 19, **130**, 131
oxyphylla, 9, 16, **87**, 88, 89
pallida, 22, 24
panamensis, 3, 8, 12, **32**, 33
papillosa, 8, 12, **29**, 30
parvifolia, 8, 13, **44**, 46, 47, 48
platyphylla, 77, 83
pleurobotryosa, 10, 19, 125, **127**, 128, 129, 130
prionophylla, 8, 13, **44**, 45, 108
psychotrioides, 12, 21, **180**, 181, 182, Frontispiece
pyramidalis, 8, 12, **29**, 31
reflexa, 10, 19, **130**, 132, 133, 134, 166
Rekoi, 3, 11, 21, 157, **169**, 172, 173, 174, 175, 192
reticulata, 10, 17, **108**, 110, 111
reticulata var. sinuata, 10, 17, 83, **111**, 112
rosea, 9, 16, 17, **108**, 109
Rothschuhiana, 1, 9, 16, **100**, 121
rubella, 177
rufa, 8, 13, **42**, 43, 44
Schultesii, 4, 10, 19, **125**, 126, 130
Seibertii, 12, 22, **187**, 188
serrulata, 4, 7, 8, 13, 16, **48**, 49, 50, 51, 52, 53, 87, 116, 183
sessilifolia, 8, 13, **36**, 37, 38, 40, 44
Skutchii, 3, 11, 20, **157**, 160, 161
stenophylla, 10, 19, **141**, 143
Storkii, 151, 153
subcoriacea, 2, 3, 9, 16, 22, **94**, 95, 96
subulata, 3, 11, 21, **169**, 170, 171
tartarea, 11, 20, **155**, 156
tenuis, 1, 11, 21, **166**, 167, 168, 169
tetramera, 9, 14, **61**, 62, 64
tomentosa, 2, 11, 20, **157**, 158, 159
trichogyne, 1, 4, 8, 12, **22**, 23, 24
venezuelana, 11, 19, 22, **144**, 145, 146, 175
vestita, 4, 10, 18, **123**, 124, 125, 127, 130
villosa, 10, 19, **137**, 138, 139, 141
vulgata, 11, 20, **146**, 147, 148, 149
Woodsoni, 187
Pish-match, 42

Sapotilla, 157
Sarcil, 104
Sirasil de montaña, 146

Tinus adenanthera, 177
cubana, 92
fusca, 118

Uva, 24, 27, 42, 94, 104, 137

Xoc, 137

Zarcil, 24, 104